OCT. 24 1958

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

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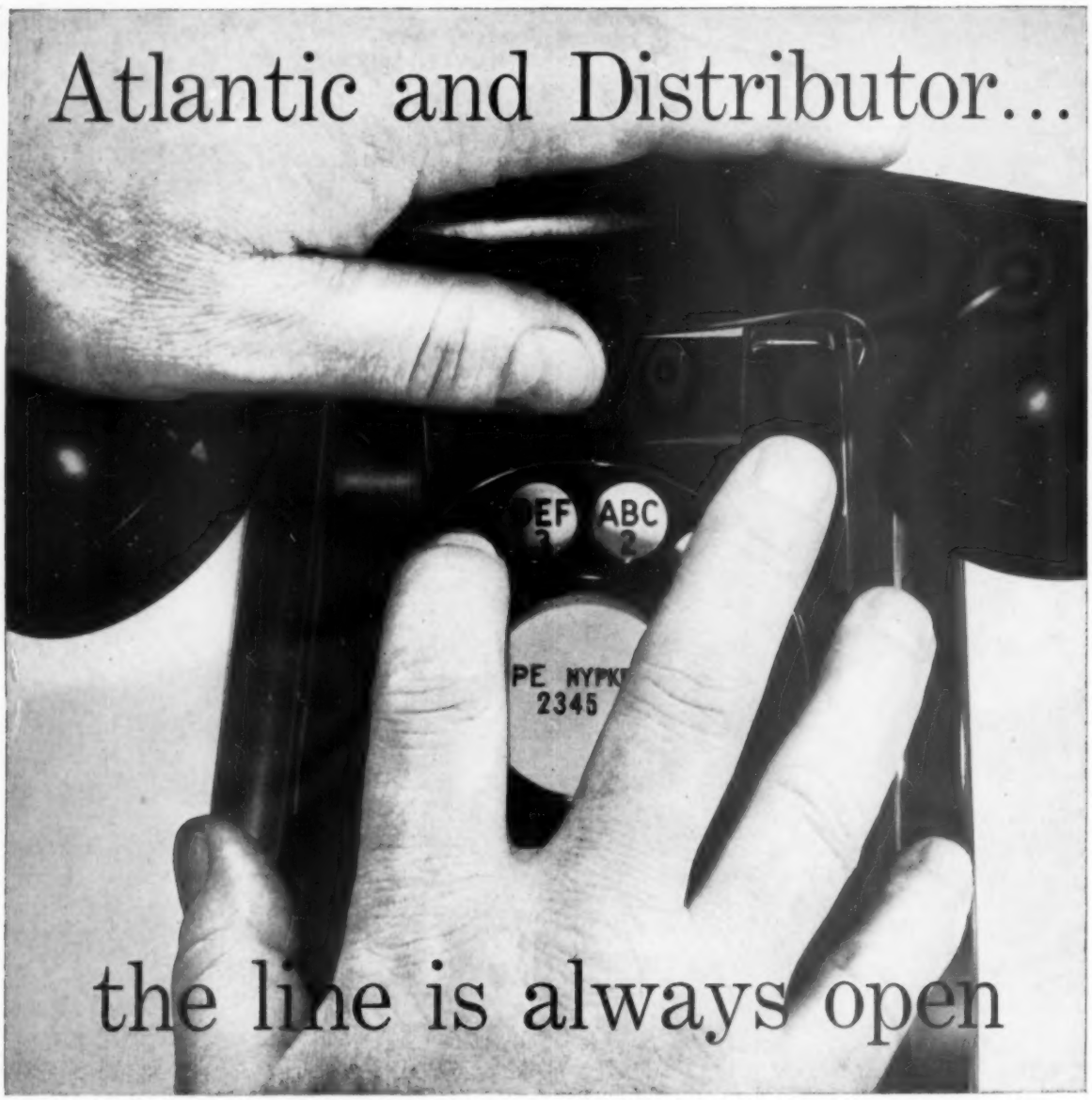

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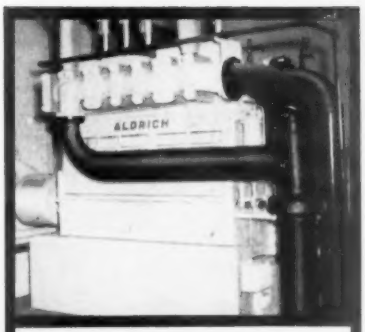

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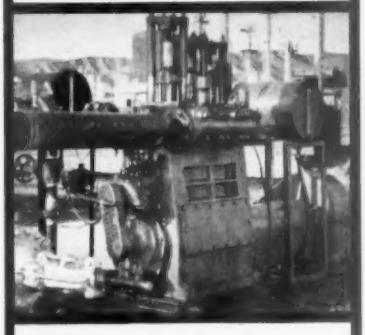

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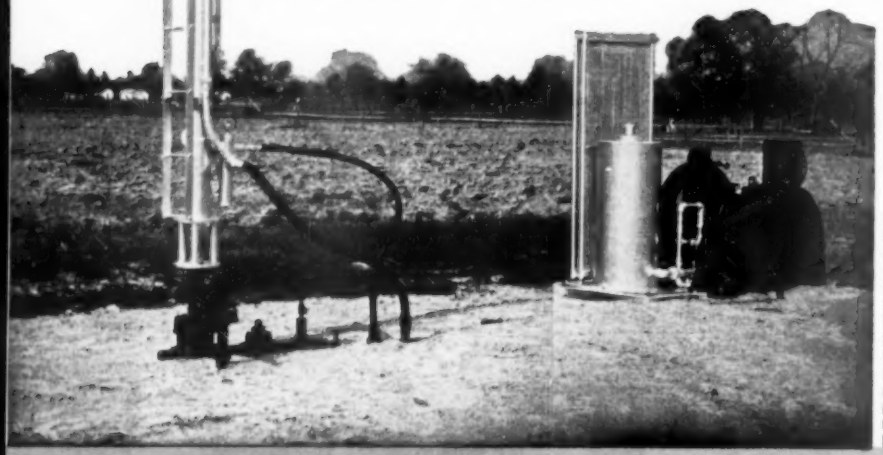

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60-Second Summary / WHAT'S HAPPENING IN OIL

AT-A-GLANCE PETROLEUM WEEK

October 24, 1958

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It may become difficult—and even more costly—to get offshore insurance. That's one impact from the explosion at the CATC group's drilling platform. . . . p. 11

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California drilling contractors, producers, and refiners face a bleak short-term outlook. Only 45% of the available rigs are active, prices of many crudes are at the 1948 level, and surplus heavy fuel oil is crowding storage. . . . p. 13

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An unusual double fishing job has been completed on Shell's No. 5 Rumberger, the world's second-deepest test. A 9,800-ft. section and a 3,600-ft. section broke off in the 23,518-ft. hole. . . . p. 20

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Note the increasing attention being given conservation problems. One reason: Rising costs have made it even more necessary to trim wasteful practices. . . . p. 9

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An oil discovery on the western flank of the Paradox Basin may open a new area of Utah for exploration. The successful test is Tennessee Gas's No. 1 U.S.A. Poison Springs. . . . p. 22

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Automating an existing plant may require difficult organizational changes. But such changes are necessary if automation is to pay for itself, a Sun official says. . . . p. 12

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Socal finally is getting to build its long-planned refinery in Hawaii. After three years of problems, the firm was able to break ground this week on a site at Barber's Point, Oahu. . . . p. 28

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Saudi Arabia and Indiana Standard are considering some compromises of a 60-40 concession pact. The company so far says Saudi terms, which include fully integrated operations, are "completely unacceptable." . . . p. 42

•

More pipelines to airports will be needed to feed fuel-hungry jet planes, now that commercial airlines are beginning to use jets. Planning for a pipeline to an airport in your area may be under way. . . . p. 36

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Waterflooding has increased production substantially in Arkansas' Magnolia field, with a reduction in the number of producing wells. . . . p. 16

•

Gulf Coast refiners are getting help on moving product from an unusual quarter—export markets. After a long lag, several cargoes were sold to European and Canadian buyers last week. . . . p. 52

Up to the Minute / SIGNIFICANT LATE NEWS

AT-A-GLANCE PETROLEUM WEEK Copyright

October 24, 1958

The world's deepest test—the Phillips No. 1-EE—was bottomed this week at 25,311 ft. Phillips was preparing to run 5½-in. liner to the bottom. It will perforate the Ellenburger from 24,967-25,311 ft. and make a test.

•

Louisiana plans to resume leasing of state-owned lands in February. It said it was making the announcement this far in advance to give ample time for nomination of acreage by anyone interested. Leasing had been suspended "indefinitely" on Aug. 22 because, the board said, the industry lacked interest. The July lease sale had drawn one of the poorest responses in the board's experience, averaging only $57.36 per acre.

•

Indiana Standard will build—and supply crude for—a 36,000 b/d refinery in Sweden. Negotiations have been completed for a deal involving Soind, Swedish Petroleum Co. (newly formed by Morgan Lindstrom, a Swedish tanker man), and the Swedish government. This will mark Indiana Standard's return to refining and marketing overseas after a long absence.

•

The last of the U.S. interests in Egypt—the Continental Oil Co. group—appears set to pull out, too. Sahara Petroleum Co. said it is suspending operations on the huge Western Desert concession it operates for Conoco, Ohio Oil, Cities Service, and Richfield. The reason given: Failure to find oil after 4½ years of exploration and expenditures of $35-million.

•

The 80-year Iran-Turkey pipeline transit agreement signed this week is seen primarily as a political symbol, at least for the present. It points up the close relationship of the two non-Arab countries amid the turbulence of Arab politics.

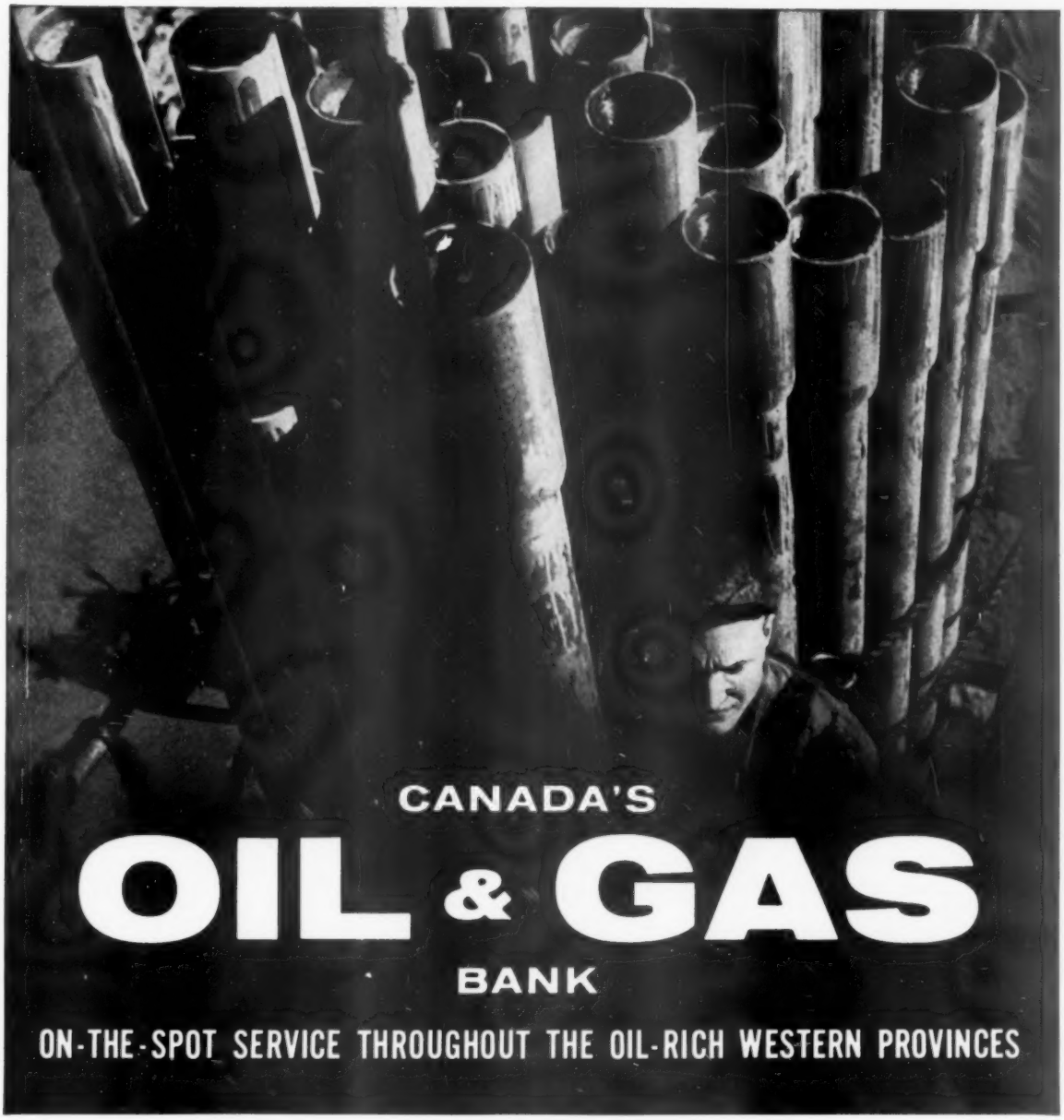
The deal provides that Turkey would get 23% of oil transport profits for five years and 50% after that—if and when the proposed 1,340-mi. line is built from National Iranian Oil Co.'s Qum area to a Turkish port.

•

The revised imports plan was scheduled to go to the Cabinet committee today (Oct. 24). Matthew V. Carson, imports boss, and his aides hammered out details of the new plan after receiving industry comments on his original proposals. Carson isn't revealing his latest version until the Cabinet committee has acted, but it's a good bet that the revisions aren't drastic.

•

The first hearing under the Texas Railroad Commission's pipeline connection order was held this week, but no decision is expected right away. The general order, issued in June, outlined the procedure for producers who are unable to get a pipeline connection to their leases. This week's hearing involved C. T. Robertson et al and Phillips Pipe Line Co.



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Conservation Rules Get New Study

Changing conditions and changing needs are causing many state agencies and industry groups to reexamine conservation policies with an eye to making changes.

Almost every oil state is currently wrestling with one or more conservation problems, and there appears to be increased momentum behind the efforts to get some major revisions made.

A series of unrelated developments in recent weeks points up this trend:

- In Oklahoma, the State Corporation Commission is holding hearings on suggested changes in its plan to overhaul its field rules.
- In Utah, the federal government's action ordering shutdown of the Aneth field has focused attention on a gas-flaring problem there.
- Within the industry, the recent formation of the Oil Industry Conservation Forum to promote sound conservation laws appears to be the starting point for a unified drive to bring about changes the industry feels are needed.

Most of the problems are not new ones, but current conditions are intensifying them.

Well-spacing, for instance, is getting increased attention because of the economics involved. A growing number of producers feel that if the same amount of oil can be produced from fewer wells, it would help greatly in whittling down costs. Therefore you can expect fresh efforts to get rules calling for wider spacing in new pools.

Also, more consideration will be given in several states to changing allowable yardsticks. For the most part, the aim of these moves will be to gain increased allowables for the deeper wells, to help offset the higher costs involved.

In many cases, proponents of changes point out that inefficient drilling and production practices in the past resulted in overdevelopment and waste. Now, with oil becoming increasingly difficult—and expensive—to find, there is an even greater urgency in the need for realistic conservation practices.

Unfortunately, there are few quick, simple solutions. Rather, these are complicated situations, involving virtually all segments of the industry, requiring careful cooperation between the industry and regulatory bodies.

The problems vary from state to state, depending to a considerable extent on the stage the state has reached in its oil development, and in its drafting of regulatory rules.

OKLAHOMA

Oklahoma is closest to making major changes in its field rules.

The state's Corporation Commission spent more than a year drafting a long list of proposed changes.

In August, it issued an 83-page booklet outlining its proposals, and set a hearing for October to give the industry an opportunity to express its views.

The industry had suggestions—quite a few of them. So many, in fact, that last week's hearing was extended to this week to cover them all (PW—Oct.17'58,p12). This deluge of proposals may cause a delay of several months in getting the final rules issued.

Observers note that, while some company spokesmen disagree with a particular proposal of the commission, it's evident that many industry officials are in general agreement with the commission that the present system is in need of some overhauling. Therefore, the tone of the hearings was one of willingness to work out differences of opinion on details.

It seems to be the general feeling that Oklahoma faces a growing struggle to keep its crude competitive, and that rule changes to help achieve this goal are highly important.

The Oklahoma proposals cover a wide range, including tighter control over waterflood operations, the use of a depth-bracket formula in setting allowables, pipeline connections, and mandatory purchases of allowables.

The last two points—pipeline connections at the order of the commission and the requirement that a buyer purchase full allowables—will probably stir up the most controversy.

Gulf Oil Corp. is already testing in court earlier efforts by the commission to require a company to get specific commission permission to buy less than the total allowable.

TEXAS

In Texas, officials are waiting for U.S. Supreme Court action, which may hold the key to future gas regulatory policy in that state.

A test of the state's jurisdiction will come in consolidated cases to be considered by the court during its current term. These cases are: Permian Basin Pipe Line Co. vs. the Railroad Commission, and Phillips Petroleum Co. vs. the Railroad Commission.

At stake is the commission's authority to make a gas-gathering company take from all producers in the field as a "common purchaser."

Attorneys for Permian Basin, a subsidiary of Northern Natural Gas Co., contend that the firm is an interstate purchaser, and therefore not subject to the regulation being enforced by the state commission.

The lawsuit involves a reservoir in Pecos County, West Texas, which produces gas containing 28% carbon dioxide. This makes it unfit for use as fuel in its natural state.

Phillips, the principal producer in the field, contracted to sell gas to Permian, which would process the gas and then deliver it to Northern Natural for sale to its Midwest customers.

Permian was to remove the impurities from the gas at cost.

Atlantic Refining Co. then bought a well in the field, and offered gas for processing and sale to Permian. But Permian didn't want it.

After considerable discussion, the Railroad Commission declared Permian Basin to be a "common purchaser," and ordered it to buy and process gas from all producers equally.

The gathering firm and Phillips attacked the order on the basis that the commission had exceeded its authority, and that its order conflicts with the Federal Power Commission's power to regulate all the way to the wellhead gas that moves into interstate commerce.

The long-argued matter of regulat-

ing field prices is an important point in the case before the Supreme Court.

If the Federal Power Commission adopts a policy of establishing prices at least to a considerable extent on the basis of the cost of production, this would tend to make prices vary from producer to producer.

Such action, obviously, would conflict with any state order that producers in the same field be granted the same terms.

The Railroad Commission stands to lose considerably—or gain considerably—from the court's decision.

If the commission's action is upheld, its position will be strengthened. But if it is overruled, its regulatory power over the natural gas industry in Texas apparently would be reduced.

Texas has made considerable progress on some of the other oil regulatory problems it has been facing.

It has held extensive hearings on one of its most perplexing problems—pipeline connections to unconnected wells. And the very fact that the hearings were held and a procedure set up for handling complaints apparently helped ease the problem.

There seems to have been some lessening of pressure, too, on another problem: "exempt" wells.

Texas had 1,101,087 b/d of "exempt" production as of Oct. 18—more than a third of the state's total permissible output. This volume has caused some to question whether the exemptions should not be pared down, because allowables of other wells have had to be curtailed so sharply.

There still remains considerable sentiment, however, to reexamine the proration structure to determine whether flush wells, waterfloods and marginal wells are being handled in the best way possible.

CALIFORNIA

California's toughest immediate problem is the subsidence at Long Beach.

Some land in that area has settled as much as 24 ft. since 1941, and considerable damage has been caused to property along the coast.

The long-standing problem was intensified recently when the U.S. government filed a lawsuit to force immediate repressuring of the drained underground cavities, which threaten extensive damage to the Navy's installations.

The state legislature had earlier passed a law providing for repressuring—on a voluntary basis at the outset—but the federal government apparently felt that action was not being taken promptly enough.

There is general agreement that repressuring must be done, but there are still a variety of problems of how to go about it, and how much area should be included.

Water disposal has been a considerable problem, but cooperation between the state and the industry has done much to alleviate the condition.

California has no regulatory body for conservation or proration. A so-called conservation bill was defeated in an election two years ago. However, unreasonable waste of gas is unlawful.

LOUISIANA

In Louisiana, a move to adopt a new depth-bracket formula for allowables seemingly has lost momentum.

Earlier this year, it appeared only a matter of a short time until a new formula would be put into effect. But an industry committee named to help work out details has been slow in drafting proposals, and the advent of a new conservation commissioner further delayed action.

For the most part, Louisiana regulatory officials have been concerned with holding the line on allowables. Now, with the pressure on this point somewhat eased, it is not likely that any major policy changes will be made soon in conservation policies.

However, the industry still is pressing for consideration of greater allowable for offshore wells to stimulate activity there.

OTHERS

In other states (except Utah) there are no acute conservation problems right now. True, several of them have budding controversies over well spacing, gas flaring, stricter enforcement roles for some state oil agencies. But they are not problems that have to be met immediately.

The situation in Utah, of course, is different. The federal government's action in ordering a shutdown of production from leases on Navajo Indian lands in the Aneth field was followed by an order from the state commission shutting down all major pools in southeastern Utah for six days (PW—Oct.17'58,pp.6,12).

The federal government's shutdown action in Utah created a stir because it was the first time it had made such a move.

Interior Dept. officials said they did

How Alberta Proration Works

Alberta, the only Canadian province with proration regulations, limits permissible production to actual nominations of buyers.

The total of the nominations for crude, for practical purposes, represents market demand. Purchasers are required to take the oil for which they nominate.

Under unforeseen emergencies, such as refinery shutdowns, the Alberta Oil & Gas Conservation Board does consider reductions in originally scheduled allowables.

Some flexibility in over- and underproduction is allowed, but overproduction must be balanced out in subsequent months.

Underproduction in any one month can be "made up" in the following month, but only up to a maximum of 20% of the subsequent month's allowable.

Normally, though, producers can look forward to a relatively smooth trend of production, since the board requires purchasers to nominate on the 15th of each month for the following month and to provide estimates then for the next two months.

Generally, allowables are established on a field basis with each well sharing equally in the field allowable except where gas-oil-ratio or water-oil penalties are in effect.

There are a few older fields exempt from proration as such, but they must produce on the basis of good engineering practices. No secondary-recovery exemptions are in effect as yet.

Commencing Jan. 1, 1960, Alberta will shift to a "residual maximum productive ability" plan to determine allowables.

Under such a plan, the prorated allowable will be based on an economic allowance (a minimum allowance based on a depth formula for determining well payouts) plus some fraction of the difference between the maximum productive ability of a well and the economic allowance.

it at the request of the Indians, and that the purpose was to end wasteful flaring of gas.

The problem may be of short duration. A gas pipeline from that area to California is nearing completion, and if it gets Federal Power Commission approval, it will be ready to start moving gas by mid-November.

Some skeptics predict it may be after the November elections before FPC takes action, because the proposed price of the Aneth gas has been made a political issue in California.

Also at issue in Utah is the question of whether to develop fields on 40-acre or 80-acre spacing patterns. This is particularly pertinent in view of reports that bottomhole pressures are dropping fast.

Some industry people complain that the federal government is getting too eager to step into regulatory situations.

They point to the Utah developments, and they note the suit filed in California. They point out that the next direction the federal government may turn may be to the offshore operations in the Gulf. Gas is being flared there, too, largely because of lack of transmission facilities.

WHEN DISASTER STRIKES, as it did to the CATC group's offshore rig, it immediately triggers a series of rapid-fire actions. One of the first is rescue work, as shown at right, above. Later attention turns to . . .

What Impact Will Rig Fire Have?

When a multimillion dollar platform is destroyed, men killed and injured, and fire loosed in wells below, it poses safety and other problems for offshore operators.

The explosion and fire involved the CATC group's operation in West Delta Block 30, offshore Louisiana.

Seven men were killed; 20 injured.

The fire was still blazing in at least two wells beneath the platform at midweek. Directional drilling by three rigs stationed just out of range of the blaze was getting under way.

M. M. Kinley's fire-fighting firm was called in to help fight the blaze.

No one knows the cause of the explosion, which occurred while a completion was being made.

One phase of any tragedy—rescue work—appears to have gone smoothly after the CATC explosion.

Crews from nearby rigs sent word of the tragedy, and rescue work, headed by the Coast Guard, followed a prearranged pattern. Rescue boats and helicopters moved to the scene quickly, and rescued men who had jumped off the flaming platform into the water.

BEFORE THE TRAGEDY, history was being made at the CATC rig. This picture, taken less than three months ago (PW—Aug.1'58,p22), shows work being done on a quadruple completion. Ed Hilburn, second from left, and Bob Henderson, third from left, were on the rig when the explosion occurred. Both survived.

Insurance on offshore operations will be a bigger problem than ever.

A spokesman for a leading firm that handles offshore policies said the fire will have "serious effects," and that "it might reach the point where offshore insurance will be unavailable."

Automation Needs New Labor Concepts

Automation cannot simply be superimposed upon an existing organization—either a physical plant or a work force, according to a Sun Oil Co. official.

Clarence H. Thayer, Sun's vice-president in charge of manufacturing, speaking before the Wilmington (Del.) chapter of the Society for the Advancement of Management, said that imposing automation upon an existing organization often results in higher costs with no other advantages to offset them.

Designing and creating an organization compatible with an automation system, he said, can be accomplished most easily when the organization and the system are combined in a "brand new plant."

He cited Sun's experience with the building of a new 15,000 b/d refinery at Sarnia, Ontario, in 1952.

Because of the small capacity, Thayer said, Sun was faced with an extraordinary demand for economy in order to be able to compete with larger refineries.

In the case of Sun's Sarnia refinery, the designing of a highly automated plant was accompanied by the design of a staffing plan which, with the cooperation of employees, changed the concept of refinery working forces.

The plant was laid out so that three ten-man crews could operate and control the entire refinery from one spot. The only remaining functions were those of the accounting department, the laboratory technicians, and maintenance. The latter, Thayer said, was contracted to an outside maintenance force.

Use of the three "teams" brought about the creation of a single department—the operating department—to run the entire refinery.

The operators—some of whom had no previous refinery experience—were trained, Thayer noted, "somewhat like the crew of a submarine, in that every man could fill almost any breach."

Every operator at the Sarnia plant is on the salary payroll, with salary advances based on a merit system.

Thayer said there are no "first class" or "second class" operators — nor "helpers" nor "assistants."

As is the case with most salaried jobs, he said, there is a salary range for each classification, so that a man can move up in salary without necessarily being promoted.

Such an organizational set-up, he added, is entirely different from the usual one in refineries, involving strict craft lines of work.

Too, he said, there is no line drawn between supervisors and nonsupervisors at Sarnia. "Each employee," he noted, "has on the average under his control about $250,000 of equipment . . . which, in effect, classifies him as a supervisor."

The greater problem with automation comes in introducing the needed organizational changes into existing plants—a task that will face industry increasingly in the future, the Sun vice-president predicted.

Such changes will be necessary if automation is to pay for itself and return a profit.

The reason the changes will be difficult, Thayer explained, is that "with a given percentage of net profit reinvested, and taking into account the

Petroleum Week article draws . . .

Praise from the Shah of Iran

A Petroleum Week article pointing out that Iran should be considered independently of Arab nations in evaluating the Middle East situation has drawn high praise from high-ranking Iranian officials.

The article, entitled "Not All in the Same Boiling Pot," was written by Wanda Jablonski. It appeared in the Aug. 1 issue.

The main point of the article was that Western oil planners should put special emphasis on building up Iran's oil producing capacity as potential insurance against Arab oil crises.

Two letters written by Iranian officials to this magazine underscore the approval of the analysis made in the article.

They said it accurately reflects Iran's attitude and policy.

One of the letters was written to express the appreciation of the Shah of Iran for the August 1 article.

It was written by F. Rouhani, vice-chairman of National Iranian Oil Co. The text, in part, follows:

"Recently I had occasion to bring your writing to the notice of His Imperial Majesty who was very pleased with all your remarks and praised your breadth of vision and the perspicacity of your comments. He gave me permission to communicate his appreciation to you and that is the object of this letter."

The other letter was written by Hussein Ala, minister of the Court of Iran and former Prime Minister. His comments were:

". . . The article struck me as particularly timely in pointing out to the American public the fact that Iran is not part of the Arab World.

"It cannot be too often emphasized that, unlike other countries in the Near and Middle East, Iran enjoys the necessary stability, calm, and security to concentrate all her efforts on her economic and social development programs . . .

"The fact that we are often mistakenly associated with the Arab countries causes many misunderstandings and misinterpretations in the minds of our Western friends, and your intelligent comments are, therefore, all the more appreciated . . . ."

PLAN '59

PLAN '59 is PETROLEUM WEEK's analysis of the most important question now facing oil men:

How can management get the greatest return on investment this year and next?

The answer, for an industry struggling with surpluses, must be emphasis on modernization—rather than on more capacity.

To show what this fact means to men in each segment of the industry, PETROLEUM WEEK is now completing a 35-page report, based on interviews with hundreds of operating men and staff specialists. The report will tell:

- Why modernization will prove especially profitable in 1959.
- What oil companies are actually doing and planning.
- How problems in financing and organization may be minimized.

Issue date: Nov. 7.

present level of corporate taxes and inflation as expressed in the construction-cost index, a plant which formerly could be replaced every seven years without new capital must henceforth give about 30 years service."

This means that:

The older, existing plants must be kept competitive with newly built facilities during their entire physical life.

And that, in turn, means, Thayer commented, that with the almost constant changes in the physical plant needed to keep it competitive, changes in organization, personnel assignment, and working conditions will be essential.

The greatest difficulty will come in winning employee acceptance of the organizational changes required by automation, Thayer predicted.

"The age of automation demands broad talents and flexibility," Thayer said. "Yet the rigidities of custom and tradition are being fought tooth and nail by those who lack understanding of or interest in the true welfare of the working man—in his progress and in his opportunity."

Signaling a Start

British American Oil Co., Ltd., moving westward in Canada, opened its new gas processing plant at Pincher Creek, Alberta, last week.

Turning the valve to start the gas moving are E. D. Brockett, left, president of the firm, and Alberta's Premier E. C. Manning.

Note the maple leaf (Canada's emblem) formed by the gas flare.

California Oil Men say . . .

Short-Term Outlook Dim

The short-term economic outlook in California is not encouraging for drilling contractors, producers, and refiners, three industry representatives reported last week.

The spokesmen were S. I. Williams, president of Haney & Williams Drilling Co., L. R. Seaman, president of Intex Oil Co., and W. F. Kirk, manager of General Petroleum Corp.'s economics department.

Their comments were made in Los Angeles at the fall meeting of the Society of Petroleum Engineers, AIME.

Drilling contractors are faced with "steadily worsening" conditions, with only 45% of the 240 rigs available in California running, according to Williams.

A breakdown of rig activity, he says, shows that the rigs now running consist of 26% of those in the less-than-5,000-ft. depth class; 47% in the 5,000-10,000-ft. class; and 61% in the 10,000-ft.-and-deeper class.

The contractors' dilemma is that California is running out of places to drill, and that "there is a lack of any necessity to replace natural depletion by drilling new wells."

The reason for such a situation, Williams said, is that depleted reserves are being replaced from out-of-state.

California contractors are in a rugged period of readjustment, he commented, with neither offshore exploration nor onshore development drilling expected to bring any relief.

The advice offered California contractors is to turn to foreign work.

Williams said that such activity would strengthen the participant and would also remove surplus rigs from the area.

He predicted that the current period of readjustment probably will be followed by a return to "profitable drilling, but at a much slower tempo."

For independent producers, there are three alternatives: sell crude at posted prices or below and face liquidation; shut in production and await a more favorable market; or sell out.

Those were the possibilities listed by Intex Oil's Seaman. He said the "nonintegrated, nonimporting independent producer is in a tough situation because 90% of his cost is made up of steel and labor costs which are up over 50% since 1948."

And the price of low-gravity crude —which makes up the largest part of the oil produced in the state—is "roughly equivalent to the 1948 level."

One solution suggested to producers would be to band together, pool their production, become refiners, and distribute their own products.

Seaman hinted that the alternative of waiting for a more favorable market for crude may be fruitless, since it "does not appear to be coming."

Some help could come from the regulation of imported oil to an "amount reasonable to demand and to the stimulation of exploration."

Seaman also suggested that California importers be allowed to exceed their quotas as much as they like, as long as "they shut in one barrel of their California oil from each barrel of foreign oil brought in over their quotas."

The immediate problem for refiners is to find markets for 17-million bbl. of surplus heavy fuel oil, according to General Petroleum's Kirk.

In the past, he said, accumulated surpluses of fuel oil were disposed of by filling abnormally high military demand or by sales outside the normal California market area.

But because of a worldwide surplus of oil today and the availability of tankers at greatly reduced charter rates, the "price concessions that would be required for us to compete in intercoastal and foreign markets are almost prohibitive," Kirk said.

The invasion of natural gas is at the root of the surplus heavy fuel oil position in California.

Kirk said that industrial users "who are maximizing the use of natural gas to replace heavy oil may be following a shortsighted, expensive course."

No industry, he said, "can be expected to manufacture a product such as heavy fuel oil and store it on a standby basis to be used only when alternate sources of energy are not available."

If West Coast refiners are "forced" to install costly equipment to minimize heavy fuel oil yield, Kirk declared, "they could not afford to shut this equipment down in order to supply industry with heavy fuel oil when an adequate supply of natural gas on an interruptible basis is not available, without materially increasing the fuel price to compensate for lost revenue from the idle equipment."

Such increased costs of fuel would by necessity, Kirk said, have to be passed on to their customers by utility users of heavy fuel oil.

INSIDE *Slant*

CANADIANS WANT MARKETS

Canadian producers today appear to be more worried over possible future markets for gas than for oil.

This was particularly true among those attending last week's dedication of British American Oil Co. Ltd.'s Pincher Creek gas processing facilities.

All agreed with E. D. Brockett, B-A president, that with exploration, production, and processing operations as complex as they are, and investments as great as they are, it is imperative that gas markets be developed to furnish the funds to carry on future utilization of Canada's gas reserves.

Brockett pointed out that, "thus far, oil has had to provide virtually all of the industry's income. I understand that gas has contributed only 3.4% of the total amount realized from hydrocarbon production in the past ten years. But a new day is dawning for natural gas, and the Pincher Creek is an early starter on that new day."

Brockett sees reserves of over 100-trillion cu. ft. in Western Canada within the next quarter-century if markets are available.

LeRoy Menzing
EDITOR

What's New / IN THE INDUSTRY

Two Canadian pipelines may do some more juggling of plans in order to get approval in Canada for gas exports to California. Last week the two—Alberta & Southern Gas Co., Ltd., and Westcoast Transmission Co., Ltd.—agreed to use a joint pipeline (page 40). And now it appears they may turn over some of their contracted reserves to Trans-Canada Pipe Lines, Ltd. The latter company, which moves gas eastward from Alberta, needs to obtain a "protection" reservation of 1.7-trillion cu. ft. of gas in addition to the supply already contracted.

Of the 20.8-trillion cu. ft. of established reserves "within economic reach" in Alberta, only 4.1-trillion cu. ft. is considered "surplus to the long-term requirements" of Alberta and eastern Canada. The two exporters had requested a combined volume of 5.5-trillion cu. ft. for a 25-year period.

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Socony Mobil Oil Co.'s Paulsboro (N.J.) refinery was back on stream this week after a two-week shutdown due to a strike. The Independent Oil Workers Union of Paulsboro voted to return pending further negotiations on wages.

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Crude production will increase in November to a little over 7-million b/d. That's the indication based on state allowables set so far. Texas led off the increase with a continuation of its 11-day producing schedule. That will result in a 61,464 b/d increase over October, due to one less calendar day in November. The initial allowable was set at 3,004,401 b/d. Five large buyers requested 12 days, six asked for 10 days, and one nominated for only 9 days.

The New Mexico Oil Conservation Commission set its November allowable at 395,839 b/d, or 60,000 b/d above October. The over-all permissible includes 10,000 b/d of supplemental and 67,700 b/d of back allowable. The unit allowable, totaling 318,146 b/d, represents a continuation of the 34 b/d unit in the southeast and a cut of 3 b/d to a 50 b/d unit in the northwest.

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Most observers now expect the proposed import plan will undergo substantial changes without raising the over-all allocation. With company comments now in, Imports Administrator Matthew V. Carson is expected to send his recommendations to the President's Cabinet Committee soon. It appears likely, though, that imports east of the Rockies will not be broken down by refining districts and that imports of finished products will not be included.

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Oral arguments started before the U.S. Supreme Court this week in the important "Memphis Case." The Federal Power Commission and various gas pipelines are appealing a circuit court of appeals ruling that pipelines must get approval of all customers before applying for a rate increase.

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Underground nuclear blasts to open up oil production may not be feasible, due to cost and to too much heat. That's the opinion of Dr. F. G. Blake, geophysicist for California Research Corp. Nuclear blasts, he said, would release too much energy in too small a space. To start oil production, underground rock formations must be broken—not "vaporized." Low-powered devices might prevent such vaporization of rock, he said, but even so, the cost of using nuclear energy might make fracturing efforts noncommercial.

Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
October 24, 1958

Washington is fearful of more political unrest in Venezuela. The South American country now appears headed for a free-for-all presidential election next month. Diplomatic experts believe this could mean new political pressure on foreign oil companies. Venezuela's three major parties so far have failed to agree on the nomination of Adm. Wolfgang Larrazabal, present junta leader, as a unity candidate for president. Romulo Betancourt is the Democratic Action Party candidate, but he is still backing Larrazabal as a unity choice.

Regardless of who wins the Venezuelan election, oil companies probably will lose something. The question is how much. All three parties are calling loudly for a bigger share of oil profits and creation of a national oil company. But it's too early to guess how tough any party would be, once in power. There is still plenty of recognition of oil's importance to Venezuela, which now gets 56% of the oil profits. Foreign companies may be able to escape a major crackdown by giving up a few benefits.

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Opposition is building up quickly to any increase in the federal gasoline tax. Groups of highway users all over the country have gone on record against the increase of 1¢ or 2¢ per gal. which the Administration's budget-makers are contemplating. If the Administration asks for the tax to aid highway financing, highway users will work to get Congress to turn thumbs down on the idea. But there may be a fight—possibly early next year, when Congress convenes. It depends, in part, on how Treasury Dept. revenues shape up.

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"Divorcement" of marketing is becoming a hot topic again. Mainly because of Justice Dept. views, separation of the marketing, refining, and producing segments of the oil industry is again being talked in Washington. At least one—and perhaps two—congressional subcommittees are considering hearings on the subject next year. Rep. James Roosevelt (D., Calif.) expects to introduce his divorcement bill again and give it a big push. The Justice Dept. gave impetus to the separation idea by asking divorcement in its antitrust case against West Coast majors. That case is scheduled to go to trial Nov. 12.

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Watch for pressure on the Cabinet committee to take some quick action on a new oil imports plan. Already some members of Congress and some oil groups are urging the Administration not to delay a positive new program. The present program for Districts I-IV expires Dec. 31, and importers say they need advance notice of a new program to adjust their operations.

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More than ever, depletion hearings seem likely in Congress next year. Some observers in Washington are even betting that depletion will suffer a cut at the hand of Congress in the next session. But defenders of the provision insist that a full hearing will prove the need for depletion. Hearings are likely before either the Senate Finance Committee, the House Ways & Means Committee, or both. Meanwhile, Republican hopes for defeating Sen. William Proxmire (D., Wis.), an antidepletion leader, are sagging.

Tough Waterflood Scores Big Success

Atlantic Refining Co. believes it has located a new water-injection supply for the highly successful Magnolia field (Ark.) waterflood. A good source evidently has been found in the Tokio formation.

The flood, so far, has employed fresh water from the shallow Sparta formation.

Because this source supplied the city of Magnolia, and for other reasons, Atlantic has been seeking a better water zone for injection purposes.

Locating a new source wasn't too easy. Four previous efforts failed because of sand conditions, lack of volume, quality of water, and related difficulties.

The Tokio formation, which produces brine at around 2,900-3,000 ft., "looks like the answer to the problem," says an Atlantic engineer.

Atlantic is just winding up a sizable well workover program, and is planning additional surface water-handling facilities.

The company has worked over 15 wells in the field, completing 8 of them as multiples.

Some of these wells were so completed as to permit a constant check on the movement of water through the field.

Atlantic now is working on the design of water-distribution equipment and pump equipment for the injection wells.

The company believes it probably will need one more water-supply well.

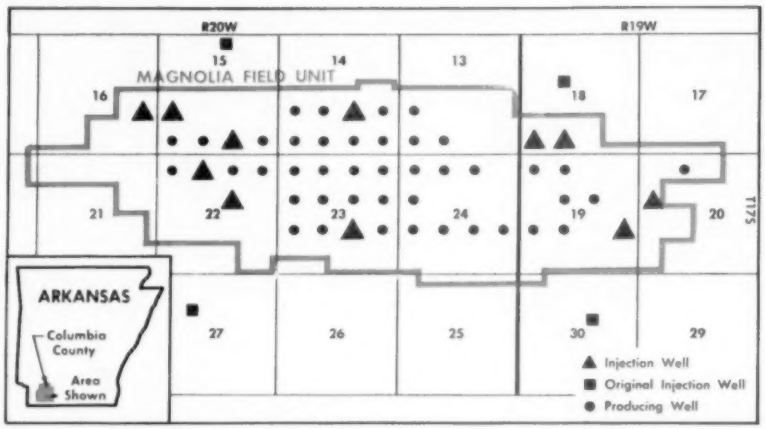
The flood has shown remarkable results to date. Substantially more oil is being produced from less than half as many wells, and roughly only 1/10th as much formation water is being produced.

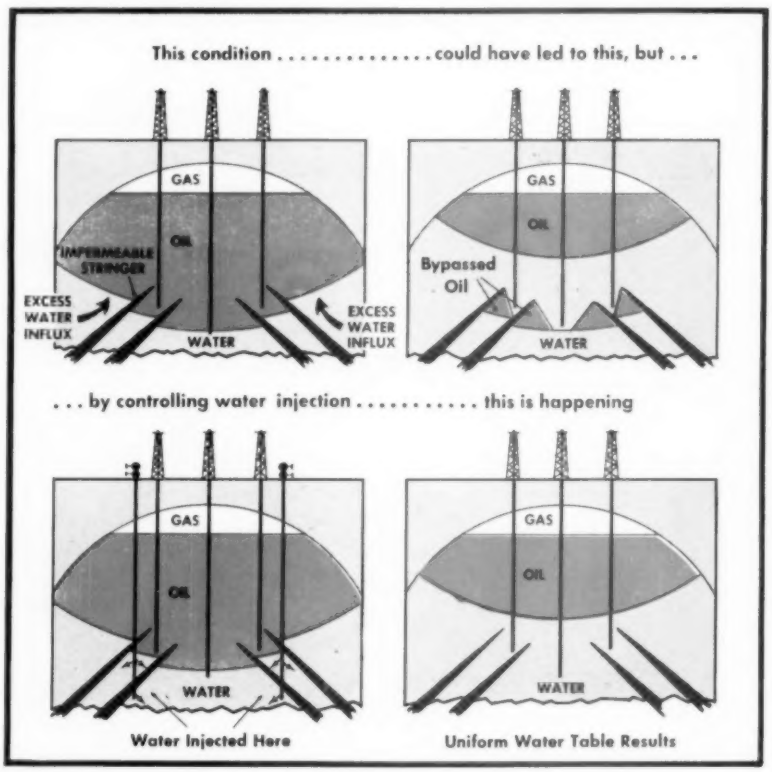
Before the present unitized operation got under way, some 7,400 b/d of oil were being produced from 97 wells, with a gas-oil ratio of 1,100:1. Water production was 10,950 b/d, with a water cut of 60%.

Today, the field is producing 11,813 b/d of oil from 42 wells, with a gas-oil ratio of 789:1 (close to the solution gas ratio). And the water cut in August was only 9.7%.

Earlier efforts to restore pressure in the field's Smackover reservoir failed.

The field, in Columbia County, is about 6 mi. long and 1½ mi. wide. A total of 116 producers had been drilled on a 40-acre spacing pattern up to January, 1942, when development of the field was essentially completed.




This condition . . . . . could have led to this, but . . .
GAS
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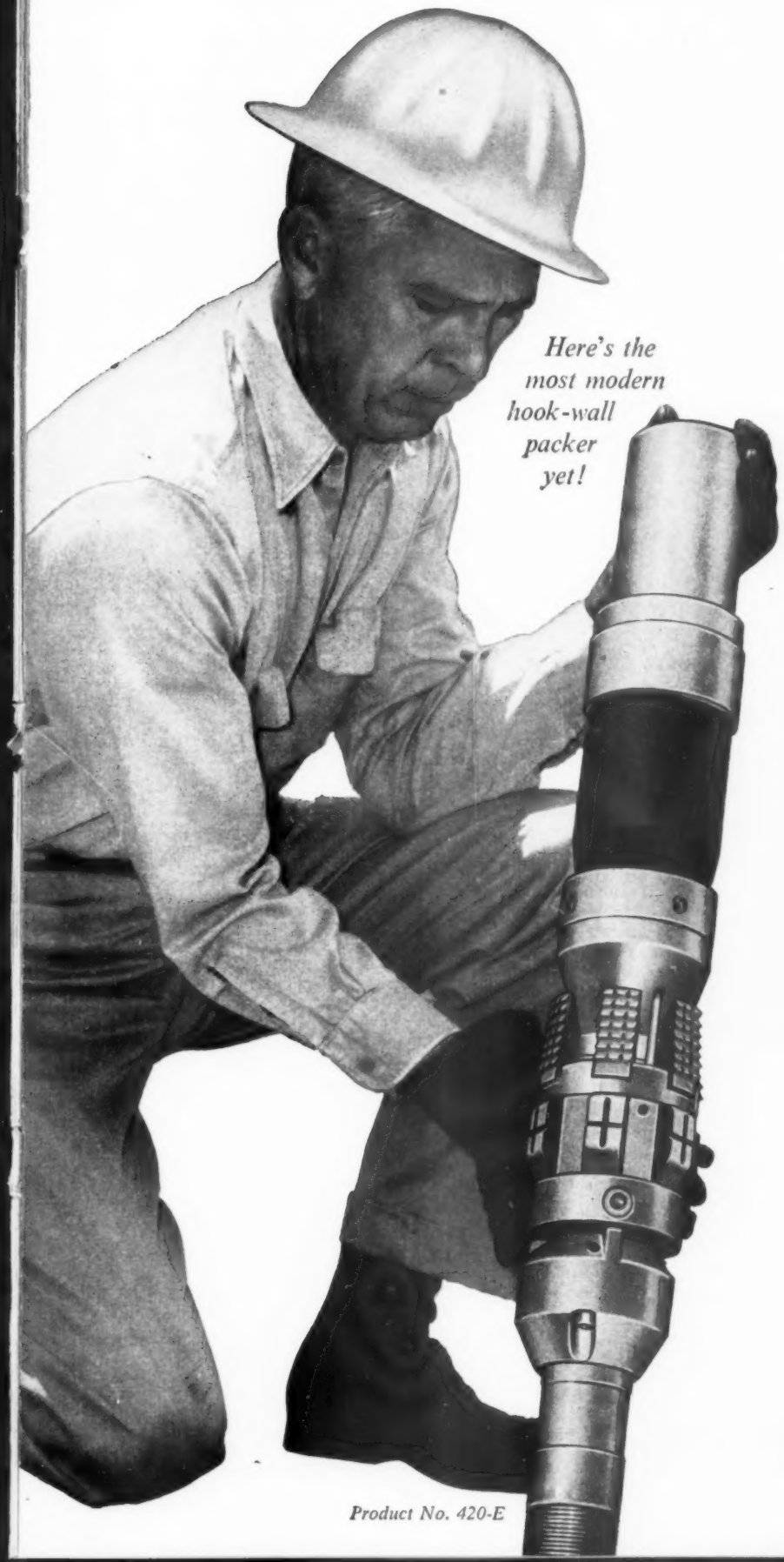
EXCESS WATER INFLUX
WATER
Bypassed Oil
. . . by controlling water injection . . . . . this is happening
Water Injected Here
Uniform Water Table Results

The anticlinal structure covers 4,300 acres with a relief of about 300 ft. Average depth of the Smackover is about 7,500 ft. At the thickest point, the oil column is around 185 ft. The original gas cap was about 106 ft. at its thickest point.

There was a good water drive initially, but the pressure dropped rapidly, threatening to allow the gas cap to drop, thereby increasing the gas-oil ratio.

Pressure continued to decline, despite the fact that the Arkansas Oil & Gas Commission imposed penalties on excessive water and gas withdrawals.

The major interest-holders then formed a voluntary program, spending about $600,000 in an effort to maintain field pressure. Four peripheral water injection wells were drilled outside the original producing



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limits of the field to pump produced and make-up water into the formation.

It became clear, however, that the injected water was moving into the upper part of the reservoir because of permeability conditions. This raised the possibility that substantial quantities of oil would be shut off and trapped below the injected water, requiring perhaps prohibitive expenditures to recover it.

A unitized operation was begun in April, 1956, with Atlantic as operator, after lengthy engineering studies by the major interest-holders.

Major participants in the field were the Vaughn interests (now Spartan Drilling Co.), Carter Oil Co., Shell Oil Co., Placid Oil Co., Arkansas Fuel Oil Corp., and Atlantic.

Complete studies were made in 1952 and 1953. Work began on a specific program in 1955.

This culminated in the operational plan which has been followed by Atlantic.

The unitized project posed some knotty problems. The principal one was the danger of bypassing oil by uneven influx of injected water.

The key feature in the reservoir is the fact that lime barriers, or stringers, divide the lower half of the producing zone into 13 different zones.

Since each of these zones had its own reservoir characteristics and water level, a uniform injection rate wouldn't work.

There would be an uneven water movement in the field if uniform injection were followed. This would cause the loss of an important portion of the estimated 31-million bbl. of oil in the reservoir.

If the gas cap—which was beginning to shrink and break up—shrank too much, oil would move into it.

The problem really boiled down to controlling the water level for the entire field.

The solution was to inject water in such manner that each of the field's 13 zones would be brought up to a uniform water table.

This desired "datum," or level, was established at 7,225 ft., about halfway between original water-oil and gas-oil contacts.

So a percentage of the total water injection rate was worked out for each of the zones to keep it, in effect, in step with the other zones and to bring them all to the desired common level.

This actually is a function of the daily withdrawal rate of the total reservoir fluids.

Eleven existing producers were converted to injection wells.

Before the unitized operation began, water was being injected at the rate of 25,360 b/d. Injection before unitization had gone on for about 11 years, in which period more than 64-million bbl. of water were injected in four peripheral wells.

Peak injection rate during the unit operation has been around 16,000 or 17,000 b/d, but it is now down to around 12,000 b/d.

Since the operation began, the cumulative production has been impressive. It could go higher if market conditions warranted.

Between April, 1956, and August, 1958, 9.9-million bbl. of oil and 7.7-billion cu. ft. of gas were produced.

Atlantic figures its direct operating costs per barrel have been reduced by one-third.

For the Pacific . . .

Coming: More Floating Drilling Units

A West Coast engineer predicts that permanently-anchored floating units will be practicable for all drilling and producing operations off California within ten years.

The engineer, W. W. Rand, of Submarex Corp., made the prediction this week at the meeting of the Society of Petroleum Engineers, AIME, in Los Angeles.

"Before the passage of another five years," Rand said, "production testing from the floating units will be a universally accepted practice off the California coast."

It appears safe to say, he added, that almost any operation common to upland drilling can be performed in holes drilled from floating vessels.

Even in water shallower than 200 ft., Rand said, "It is doubtful whether exploratory wells drilled from fixed platforms can compete economically with the floating drill rigs."

At present, however, Rand added, some operators hesitate to enter the producing horizons from a floating vessel for test wells on tidelands leases.

A Honolulu Oil Corp. engineer says that acid stimulation of a fractured shale zone can be a successful operation.

R. M. Dewar reported that Honolulu, as operator for the Antelope shale zone unit, Buena Vista Hills, Kern County, Calif., initiated an acid-treatment program two years ago. This project was designed to remove precipitated carbonate scales from equipment and to stimulate wells.

The program was active through February of this year. In this period, 35 wells were acid-treated, to yield a net increase of 1,390 b/d of oil and 3,265,000 cu. ft. a day of gas. Total cost of acidizing was $80,000.

Dewar said that displacement pressure and rate of displacement of the acid seemed to have the most controlling effect.

In most cases, he added, the acid-treated wells responded with an increase in production at a declining rate, indicating that the increased production is a permanent effect and will add to producible reserves.

This project, Dewar said, shows that stimulation of a zone in the early stages of depletion can be beneficial.

A West German bottomhole pressure gauge has been found to be an effective tool by the Shell Oil Co.

G. Lozano and W. A. Harthorn, of Shell, said the Maihak tool, manufactured by H. Maihak Co., of Hamburg, consists of a transmitter located at the bottom of the tubing and a receiver at the surface.

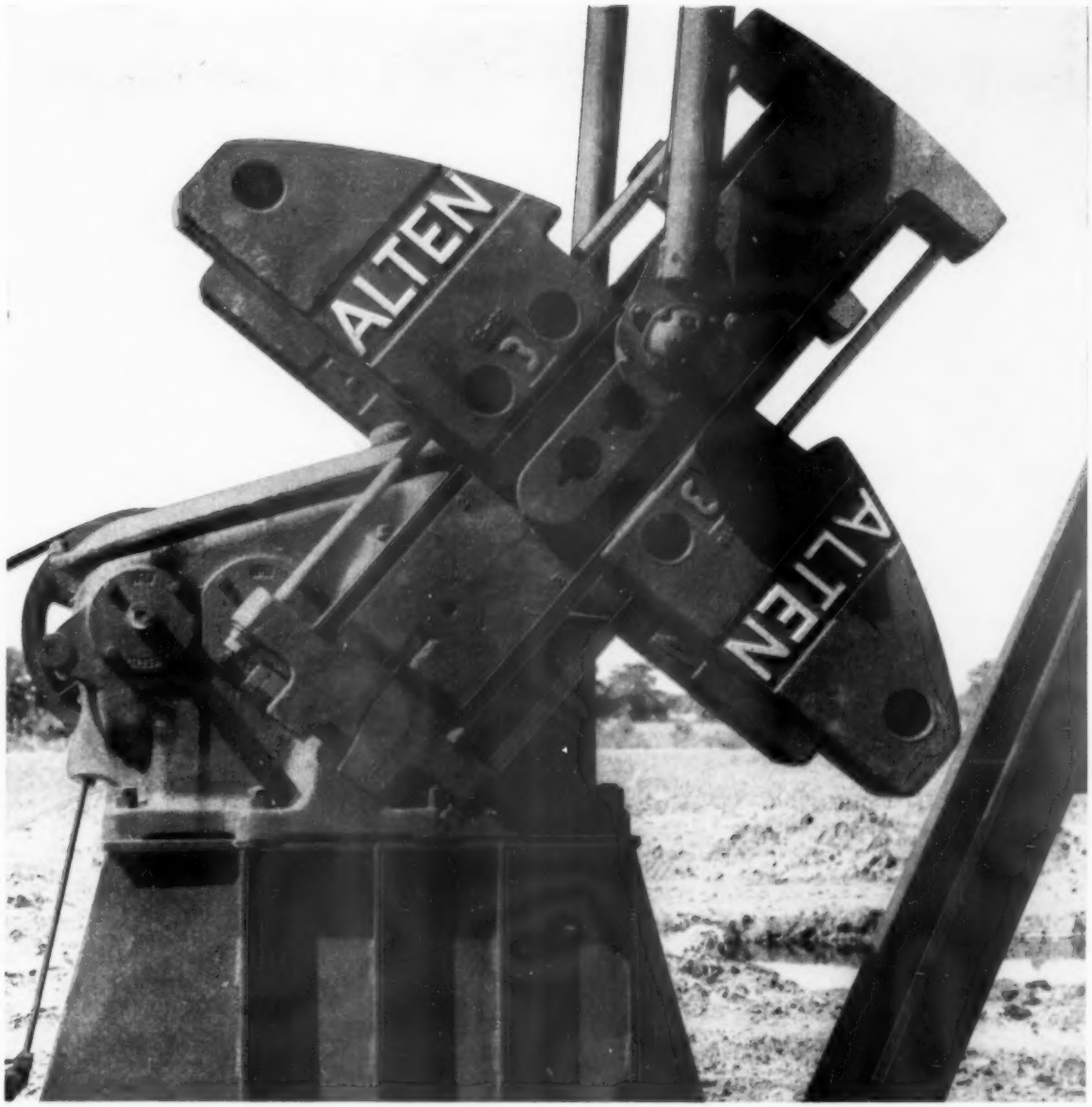
The signaling circuit consists of a single conductor wire strapped to the outside of the tubing, and the tubing itself.

The two reported that the tool, field-tested in three Shell wells in the San Joaquin Valley, Calif., has made successful measurements in zones as deep as 6,885 ft.

They added that the gauge also can be run in wells where clearances preclude running piano wire instruments.

Among other advantages the two cited: Readings can be taken with little trouble and expense; the instrument appears to stay in calibration over a long period of time; temperature does not affect the calibration; accuracy is independent of electrical values.

Disadvantages include high installation cost; inconvenience and added pulling time in wells that have to be pulled frequently.



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Rumberger Fish Job Completed

A double-fish job—probably the deepest ever attempted—was successfully completed recently within a 24-hour period on the world's second deepest hole—Shell Oil Co. No. 5 Rumberger, Elk City field, Beckham County, Okla.

About 9,800 ft. of drill pipe, weighing about 10 lb. to the foot, twisted off while operator was coming out of the hole at 23,518 ft. to change bits (PW—Oct.3'58,p47).

When Helmerich & Payne, Inc., the contractor, began pulling the remaining upper section of pipe from the hole, a pin failed, and another 3,600 ft. of pipe fell into the hole on top of the 9,800-ft. section.

The H-P crews were able to latch onto the two pieces of pipe and bring them to the surface within a 24-hour period—a feat that would have been thought impossible a year or so ago.

Jim Gregath, H-P drilling engineer at Oklahoma City, told PETROLEUM WEEK that the main contributing factors to the successful fishing operations were the "Black Magic" oil-base mud used and "the fine condition of the hole."

Circulation broke, but was regained almost immediately upon latching onto the pipe in the hole. Normally, with a section of pipe in the hole, circulation cannot be restored so quickly.

The top section of fished-out pipe (3,600 ft.) was found to have about 15 bad pins—obviously jarred loose when the string fell.

The pipe has since been thoroughly tested and found to be in good condition. Operator resumed drilling and was expected to hit contract depth of 24,000 ft. this week.

As of last week, operator was drilling below 23,885 ft., making from 40 ft. to 50 ft. per day.

The deep geological test is reported not yet to have reached its goal—the Springer formation.

Indications are that operator will stop drilling when 24,000 ft. is reached, if the Springer is not reached by then.

Casing has been run to 20,102 ft., with open hole to total depth.

Considerable use has been made of diamond bits below 20,000 ft.

Helmerich & Payne called the hole the "world's deepest straight hole" to a depth of 20,000 ft., when bottom was only 176 ft. off vertical. Below that depth, however, the hole has drifted, due to the smaller diameter and because of formation conditions.

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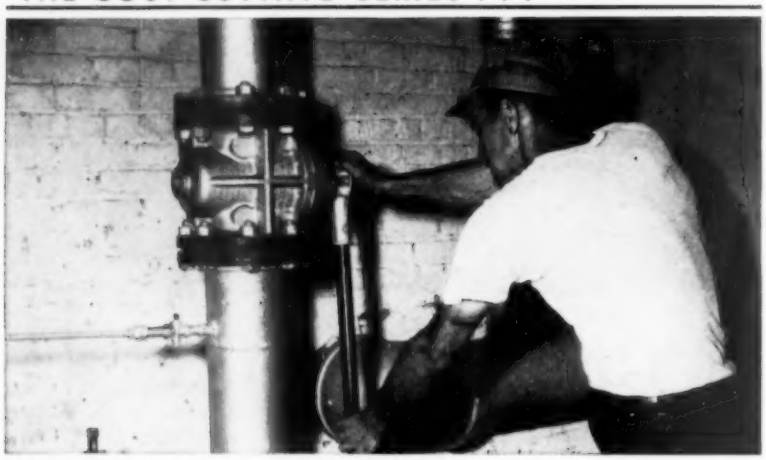

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Engineer Urges Wider Spacing

Another call for wider spacing in drilling has been made, this time by John E. Garrett, Atlantic Refining Co. engineer.

Garrett, senior engineer in charge of proration and unitization for the company, spoke last week at the University of Texas, at one of a weekly series of lectures by the company's experts.

"We can legislate all we want to forbidding close spacing, but it won't work until we provide the incentive to do otherwise," Garrett said.

He expressed the opinion that the U.S. is "not competing, economics-wise, with petroleum from the Middle East or South America." One major reason, he said, is the drilling of too many wells in developing this country's oil fields.

He noted that Texas, with about 185,000 wells, produces an average of 17 b/d per well. The average Louisiana well produces 41 b/d. But in the Middle East, wells produce an average of 4,520 b/d.

Six Middle East nations that produce, together, more crude than Texas have a total of only 776 wells—less than 0.5% of the Texas total.

Garrett said the U.S. must devise a system which will prevent an operator "from drilling a pool on 40-acre spacing when 1,000-acre spacing would do.

"If we need to drill only a small fraction of the number of wells we do today to get the same amount of reserves, surely we could produce this oil more cheaply."

"Proration is going to be one of the most important keys to the future success or failure of the oil industry in the U.S.," he said.

"With the proration system we have been using—whereby an incentive is given for drilling more and more wells—the result has been that too many wells have been drilled in an attempt to increase or maintain one's position in the limited market for petroleum."

Garrett added that for some reservoirs there is no realistic allocation rule or allowable formula.

Garrett said that the maximum efficient rate (MER) used in allocating production in many oil fields is "a misconception. This is so because a majority of the reservoirs discovered have no realistic MER at all. These are the solution-gas-drive reservoirs. For some pools, however, especially water driven ones, this determination can be meaningful."

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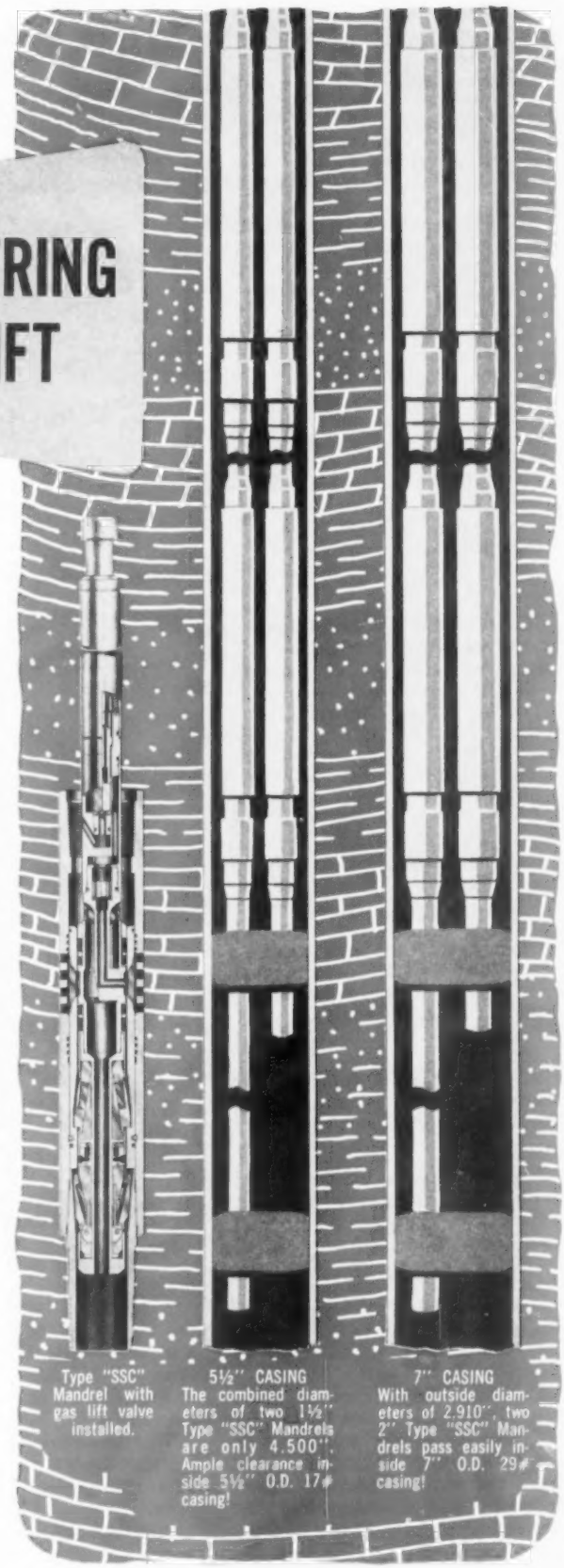
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Utah Wildcat May Open Big New Area

Tennessee Gas Transmission Co. apparently has proved what many geologists have long contended: The western flank of the Paradox Basin in Utah is a "good bet" for oil prospecting.

The section of the basin at the eastern end of the boundary line between Wayne and Garfield Counties has been especially "hot" since a small independent—Paradox Production Co., of Salt Lake City—found evidence of oil in sandstone stringers of the Hermosa formation early last year.

Big land transactions, farmouts, and drilling arrangements involving many majors climaxed this discovery with activity that seemed—on the face of it—to be out of proportion to what little evidence of oil accumulation had been discovered by Paradox.

But the industry continued to play its hunch. Now it seems to have paid off.

TGT's No. 1 U.S.A. Poison Springs, section 4-31s-12e, Garfield County, may prove to be one of the more significant wildcats of the year.

The No. 1 Poison Springs is 6 mi. west and south of any previous drilling, and about 50 mi. southwest of production at Big Flat, in Grand County.

The wildcat recovered 160 ft. of 39-gravity oil on 1½-hour drillstem test of the Hermosa (Pennsylvanian) sand at 4,164-69 ft. Flowing pressure was low (52 psi.), indicating low porosity.

Other shows have been found in samples from 4,310-676 ft. At last report, TGT was preparing to core at about 4,676 ft. The prospect is to be drilled to the Devonian, at about 6,100 ft.

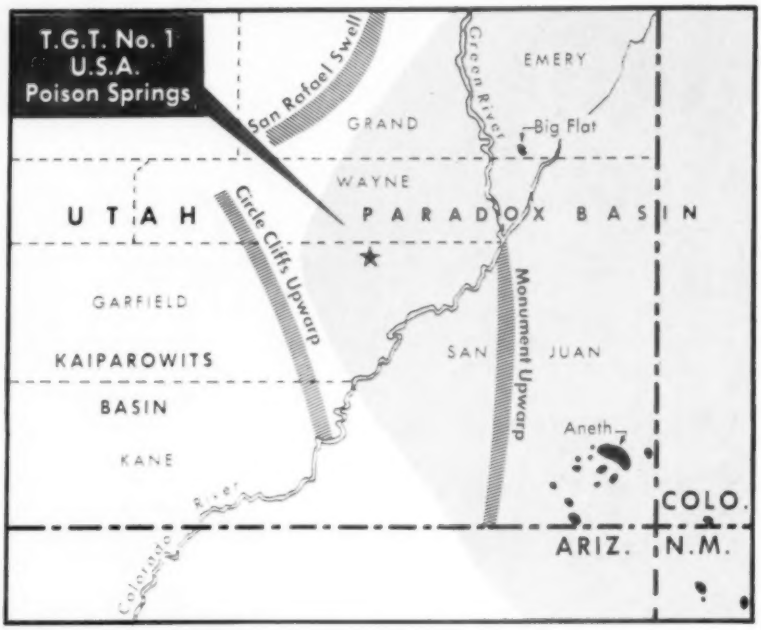
Whether or not the Poison Springs wildcat is completed is not the significant factor, most oil men in the area say.

The wildcat proves the presence of oil through an apparently large area in the marine sandstone of the Hermosa-Paradox formation.

This proof is in the form of a change of facies rock nature from the prolific limestones of the Aneth-Desert Creek area, more than 60 mi. southeast, in San Juan County, to sandstone at Poison Springs.

The Aneth area limestones have lifted Utah to one of the bigger producing states of the country in a matter of only two or three years.

But the marine sandstones are regarded by western geologists as "incomparably" better reservoirs than the limestones.



POISON SPRINGS WILDCAT has had oil recovery from marine sandstones of the Hermosa-Paradox formation, supporting geologists' claims of "big" oil in the untapped area.

So expectation is very high for finding "big" oil in an arc-like area extending more than 70 mi.

This arc extends from around Hanksville, on the southern edge of the big San Rafael Swell, southeastward to the western part of the Monument Upwarp.

This broad arc of marine sandstone rests on a shelf created in ancient times by the shoreline depositions of a series of salty lakes, or a sea.

Eventually, the productive area may prove to extend as far west as the Kaiparowits Plateau, in Kane and Garfield Counties.

But much geological reconnaisance remains to be done, of course.

It is expected, however, that—as in the limestone of the Paradox formations, where wells with initial potentials of more than 2,000 b/d have been completed—"porosity belts" will be the basic key to big production in the arc area.

A spokesman (not from TGT) says the No. 1 Poison Springs discovery will rank "as great as, if not greater than, the Mississippian development of Pure Oil Co. at Big Flat" (PW—Jan.10'58,p19).

This spokesman adds: "We had hoped for physical evidence of free oil in the marine sandstones of the Hermosa.

"In this well, we have that evidence."

The find, however, is not expected to set off a leasing boom.

Most majors already had moved quickly into this area after the first discoveries at Aneth-Desert Creek—if for no other reason than to secure protective acreages.

The Paradox shows in sandstone stringers in the Dirty Devil area set off purely geological drilling about a year ago.

Involved now in major plans, leaseholds, and the like, are Standard Oil Co. of California; Sinclair Oil & Gas Corp.; Superior Oil Co. of California; Texas Pacific Coal & Oil Co.; Richfield Oil Corp.; Carter Oil Co.; British-American Oil Producing Co., and others.

If oil is found in the Hermosa in this area of the Paradox Basin, it will be at depths about 1,000 ft. shallower than at Aneth-Desert Creek. This will strengthen the determination of the industry to test, also, the Mississippian rocks—something that can be accomplished by drilling to between 5,500 and 6,500 ft.

Several tests aimed at the Mississippian already are under way, or planned, along the Colorado River, about 35 mi. east of the TGT test.

While the road from Hanksville to Hite (Utah 95) has been improved in recent years, terrain will still continue to be a big problem in this area, one of the most desolate in the U.S.

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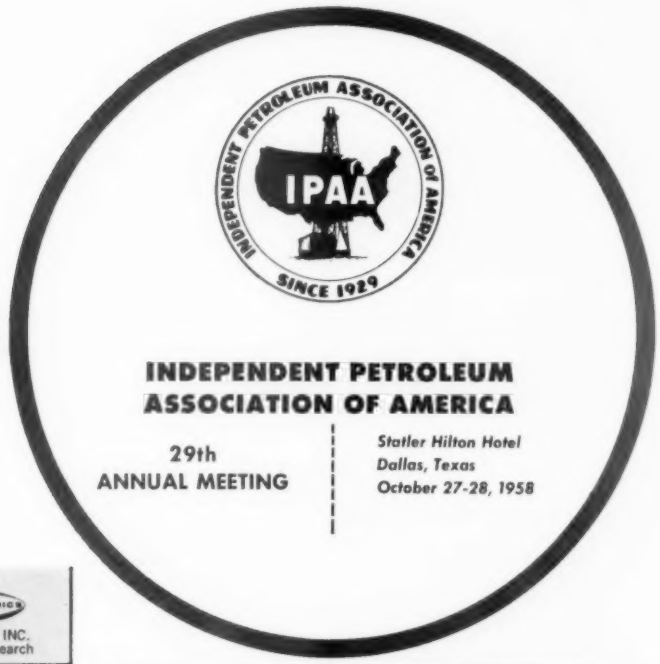

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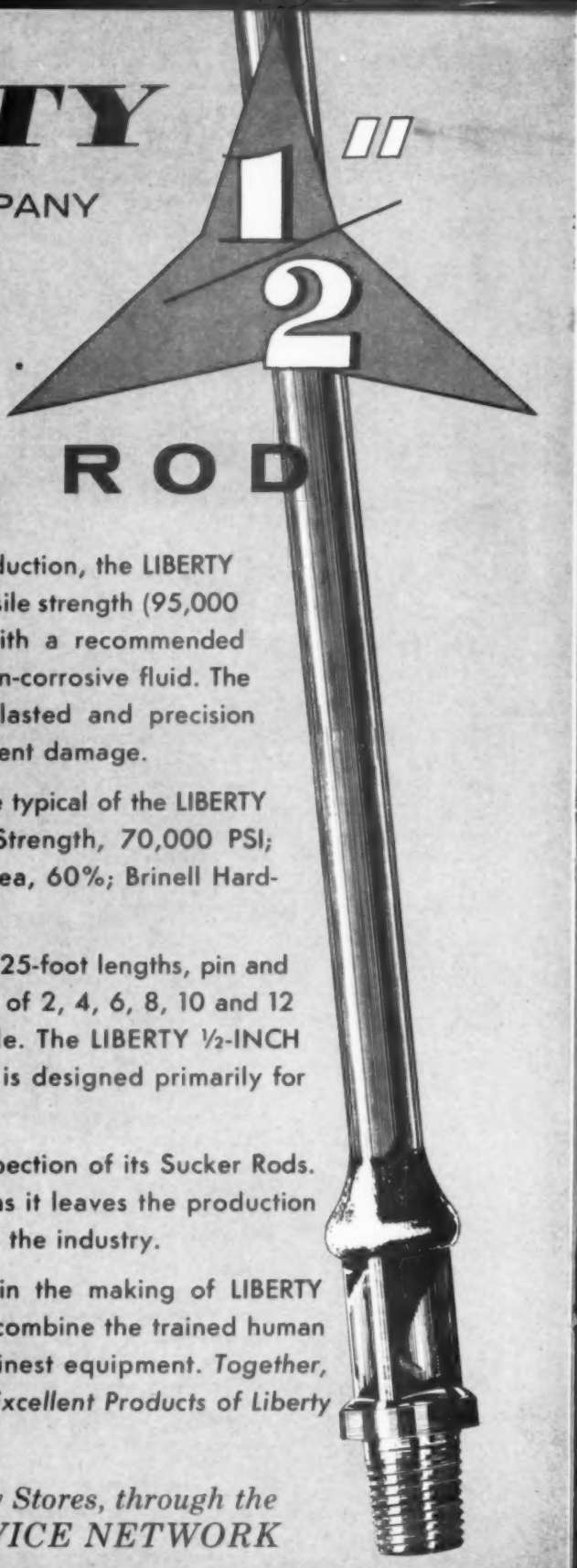

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What's New / IN EXPLORATION, DRILLING, PRODUCTION

Alaska Activity Hits a Fast Pace

The third test on Alaska's Kenai Peninsula is now drilling below 11,209 ft.

The test is 1¼ mi. southwest of No. 1 Swanson River Unit, the Standard Oil Co. of California-Richfield Oil Corp. discovery on the peninsula. The discovery, completed last year, was shut in until Oct. 10, when Standard, as operator, started running a sustained production test. Oil produced during the test is being shipped to Standard's Richmond (Calif.) refinery (page 40).

Production tests will be made on the second Swanson River discovery as soon as equipment arrives. A fourth wildcat in the area is planned.

After tests of the first two wells are completed, Standard plans to shut them in while further development and exploration is undertaken in other parts of the Swanson River country, and in the Deep Creek area, 40 mi. to the south.

Standard also will study the feasibility of constructing a pipeline to move the oil to tidewater.

Halbouty Alaska Oil Co.'s first well in Alaska will be drilled early next year on the Kenai Peninsula.

The proposed test site is 3½ mi. southwest of Richfield No. 1 Swanson River unit. Arrangements are being made to ship a complete rig, spare parts, and other materials to the area.

Since the discovery of oil on the Kenai Peninsula, lease applications have been filed on more than 33.5-million acres of Alaskan lands according to the Bureau of Land Management.

About 16-million acres have been officially leased, providing Alaska with about $4.3-million in revenues.

•

Leasing News

The California State Lands Commission has finally approved a 3,840-acre tidelands lease in Santa Barbara County to Standard Oil Co. of California and Humble Oil & Refining Co.

Approval of the lease had been delayed because the commission thought that the Standard-Humble bid of a $770,837 bonus plus a sliding-scale royalty was too low. However, a consulting engineer hired by the state advised the commission to accept the offer, because "the possibility of finding oil there is much less than formerly believed."

A sale of drilling reservations on Alberta lands Oct. 9 brought the provincial government $2,026,538.

Biggest buyers were Standard Oil Co. of California, paying $631,777 for 6,560 acres southwest of Edmonton, and Sun Oil Co., paying $448,333 for 9,600 acres in the Swan Hills district.

Of the 99,435 acres offered, only one parcel, totaling 4,000 acres north of Athabasca, failed to draw any bids.

The Swan Hills area of Alberta attracted the highest bids at an Alberta lease sale Oct. 16.

A group made up of Home Oil Co., Ltd., French Petroleum Co. of Canada, Ltd., Kern County Land Co., Fargo Oils, Ltd., and General American Oil Co. of Texas paid $1,350,500 for a 320-acre Swan Hills lease. The group also leased another 320-acre parcel in the Swan Hills area for $1,250,000.

Bonuses at the sale totaled $10,150,000.

Carter Oil Co., with a bonus bid of $228 per acre, was high bidder at the Oct. 14 sales of leases on Fort Peck Indian lands in Montana.

A total bonus of $665,564 was paid for the 94 tracts sold. The complete offering consisted of 34,160 acres, in 162 tracts.

More than 43,000 acres of Colorado state lands will be offered for lease on Nov. 5 by the state Board of Land Commissioners.

A total of 65 tracts are listed. One of these, in Bent and Otero Counties, contains 12,952 acres, and is the first tract of such size to be offered under recently revised rules adopted by the board. The new rule allows the sale of sizable tracts of contiguous lands to a single bidder.

•

The Arkansas Water Pollution Control Commission has ordered oil producers to start a five-year program by Jan. 1 to stop-water pollution of the Ouachita River.

The commission said that producers in the Ouachita River basin must cut pollution 20% each year, so that pollution is halted completely by Dec. 31, 1964.

M. L. Wood, director of the commission, said the order meant that about 100 wells would be shut down. These wells, he said, are not producing enough oil to justify the use of expensive salt water injection equipment.

•

Lone Star Steel Co. has placed back in operation two of its open hearth furnaces in East Texas, to replenish low inventories in several sizes of oil well casing.

The furnaces have been idle since Aug. 3.

Lone Star president E. B. Germany says that badly depleted oil country pipe stocks are brightening the market picture for the company. He also predicts that fourth quarter drilling will be "considerably" above the year's average.

•

The Texas Railroad Commission has authorized an experimental in situ recovery project in Coleman County, West Central Texas.

John H. DeFord will use the thermal project on his E. E. Knight "B" lease, to boost recovery from the Amerada sand reservoir.

•

Although no new pools were found in Illinois in September, nine extensions to pools were found, according to the state Geological Survey.

Extensions were listed for the Woburn Consolidated pool, Bond County, and the Mt. Auburn Consolidated pool, Christian County, among others.

Of 246 tests completed in September, 105 found oil, and 1 found gas.

•

A $20-million gas conservation plan is now in operation at Alberta's Pembina field (PW—Jun.20'58,p22).

A $5-million fractionating plant, operated by Goliad, Ltd., is on stream at Drayton Valley, fed by casinghead gas from the field.

Its design capacity is 85-million cu. ft. per day of casinghead gas, from which can be produced about 65-million cu. ft. per day of residual dry gas

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The Montana Land Board has referred to the state Oil & Gas Conservation Commission a Carter Oil Co. request for unitization of the 7,682-acre Belfry unit, Carbon County.

The unit is 10 mi. northwest of the Elk Basin oil field, which straddles the Montana-Wyoming state line. Under unitization, a secondary recovery project would be started.

•

A new standard for letter symbols for petroleum reservoir engineering and electric logging has been approved by the American Standards Assn. and published by the American Society of Mechanical Engineers.

The standard, Y-10.15-1958, is available from ASME, 29 W. 39th St., New York 18, N. Y., or ASA, 70 E. 45th St., New York 17, N. Y. Price: $1.50.

•

American Hydrocarbon Corp. has bought 18 producing wells in the DeLong field area, Stephens County, West Central Texas.

The wells, on 420 acres, produce about 12,000 bbl. per month. The purchase price was over $500,000.

•

Murmanill Corp. has acquired control of C. G. Glasscock-Tidelands Oil Co.

Details of the transaction were not revealed, but it is understood to involve the purchase of Glasscock stock. Involved in the transaction are Glasscock assets of $18-million, including 14 rigs and holdings in South Texas and South Louisiana.

•

Drilling Highlights

New Mexico—The Texas Co. No. 1 Peery-Federal, section 29-15s-30e, Chaves County, was dually completed for 1,053 b/d of 55-gravity oil through 34/64-in. choke and perforations at 11,050-134 ft. in the Devonian, and 1,096,000 cu. ft. of gas daily and 28 b/d of distillate through 1-in. choke and perforations at 12,068-106 ft. in the Ellenburger. The discovery is 4 mi. north of Square Lake field.

South Louisiana—Mississippi River Fuel Corp. and Hope Natural Gas Co. No. 2-E Louisiana Land & Exploration Co., 23s-16e, in the Round Bay area, Terrebonne Parish, flowed 3.1-million cu. ft. of gas daily and 42 b/d of distillate through perforations at 9,823-26 ft., 4,590,000 cu. ft. of gas daily and 91 b/d of distillate through perforations at 9,936-50 ft., and 2,440,000 cu. ft. of gas daily and 72 b/d of distillate through perforations at 10,026-46 ft. Operator will select two of the zones for dual completion of the multiple-pay discovery.

Northeast Louisiana—R. A. Campbell No. 2-A Turner, section 56-8n-10e, Concordia Parish oil discovery 2 mi. southeast of Clayton field, was completed for 119 b/d of 45.6-gravity oil through 10/64-in. choke and perforations at 5,058-63½ ft. in the Wilcox sand.

West Texas—Paul C. Teas No. 1 Skeeter-Slaughter, section 24, block 1, Jasper Hays survey, Garza County, was dually completed for 312 b/d of 38.4-gravity oil through 5/32-in. choke and perforations at 8,168-78 ft. and 8,192-96 ft. in the Strawn, and 370 b/d of 39.7-gravity oil through 3/16-in. choke and perforations at 8,491-96 ft. in the Ellenburger. The discovery is about a mile southeast of Teas Strawn pool.

In Nolan County, J. R. McLean and Wes-Tex Drilling Co. No. 1 Urey Mae Ussery, section 110, block X, T&PRR survey, flowed 126 b/d of 38-gravity oil through 15/64-in. choke and perforations at 5,638-44 ft. The well revives production in the abandoned Urey Palo Pinto reef pool, 2 mi. northwest of Divide field.

Utah—El Paso Natural Gas Co. No. 4 Southman Canyon, section 29-10s-24e, Unitah County, flowed 4.7-million cu. ft. of gas daily with 121 b/d of distillate through open tubing and perforations at 5,942-66 ft. The discovery is 4 mi. southeast of production, with no previous drilling within 3 mi.

Southwest Texas—Carrl Oil Co., South Shore Oil Development Co., and George Coates No. 1 Eleanor Kelly, section 5, Guggenheim and Cohn subdivision, Nueces County Frio sand discovery 3½ mi. southwest of Corpus Christi, was completed for 136 b/d of 32-gravity oil through 10/64-in. choke and perforations at 6,266-69 ft.

Wyoming—True Oil Co. No. 1 Krause, section 33-49n-68w, Crook County, was completed for 450 b/d of oil through perforations at 6,747-78 ft. in the Dakota. The discovery is 2½ mi. southeast of Dakota production at South Donkey Creek field.

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Socal Starts Work on Hawaiian Refinery

As Standard Oil Co. of California breaks ground today for its Hawaiian Islands refinery at Barber's Point, Oahu, it will be nearly three years behind the schedule it set for itself four years ago. But both the company and Honolulu citizens will be a lot happier than with the previously chosen Sand Island site.

Socal first announced plans for the Hawaiian refinery in November, 1954, with plans to find a site and break ground by the end of 1955. Early in 1955, the company selected the Army property of Sand Island, in the mouth of Honolulu harbor, as the ideal site. Local military officers indicated willingness to relinquish part of Sand Island for the refinery, which was seen as having a defense value.

But neither Socal nor the military reckoned with the civic reaction that developed. Though important segments of both the local government and the local business community were cordial to the proposal, others raised objections about the possibility of smog over Honolulu, danger to the downtown area with the refinery under the path of airplane take-offs and also near incoming ships, and alleged unsightliness of a refinery at the entrance to the main tourist port of the islands.

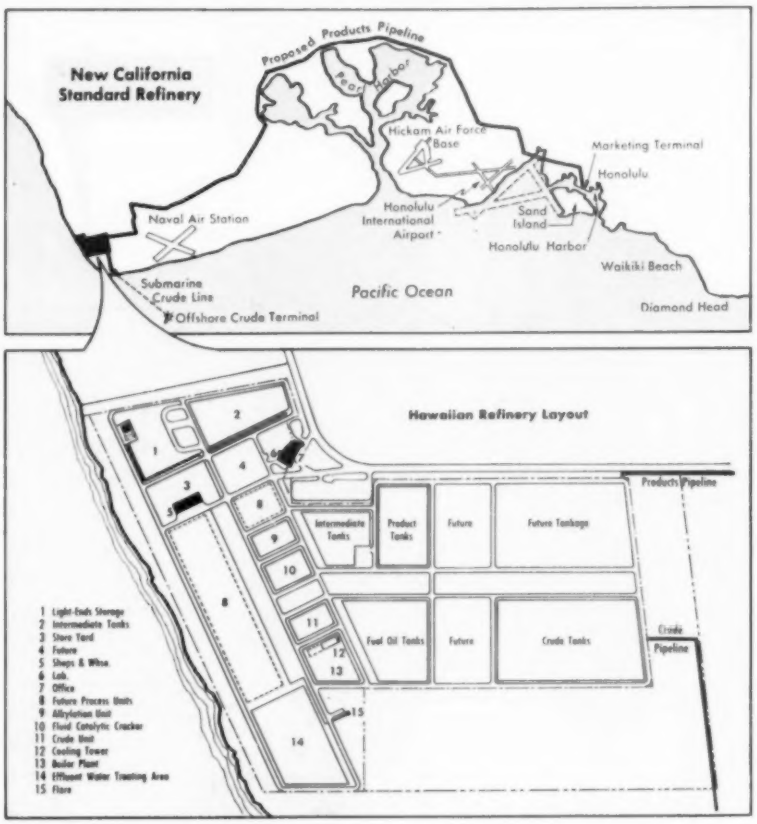
The company tried to reassure the public on all counts, and won approval for the plans from city and territorial governing bodies. But the furor caused the plans to become involved with the Defense and Interior Depts. In 1957 it was finally determined that an act of Congress was needed to clear the site for the refinery—so Socal announced that it would reassess the problem of a Hawaiian refinery location.

A few months later, the company announced a tentative agreement to relocate at the present site, some 25 mi. by road (16 mi. as the crow flies) outside of Honolulu, on the west coast of Oahu, at Barber's Point. The new site has drawn nothing but praise.

The Barber's Point site, although less desirable from a marketing point of view than the Sand Island site, does offer engineering and construction advantages.

The main drawback to the Barber's Point location is the need to build a 22-mi. products pipeline to a marketing terminal near Sand Island. On the other hand, the Barber's Point land is better, and there is more of it.

The 108-acre Sand Island site was about half on filled land, half on submerged land that would have required filling—partly at first construction, more as needed for later expansion. At Barber's Point, Socal has 300 acres of solid ground (200 purchased, 100 leased), giving room for expansion.



NEW HAWAIIAN REFINERY for Standard Oil Co. of California is at Barber's Point, Oahu, 16 mi. from Honolulu. Crude enters the refinery through a submerged pipeline from an off-shore terminal. Products are pipelined to downtown Honolulu.

The crude supply for the refinery will be pumped from an off-shore terminal through a 10,000-ft. submarine pipeline.

Crude for the refinery will be drawn from various sources, as economics dictate, including California and other U.S. sources, Sumatra, Arabia, Venezuela, and other foreign countries.

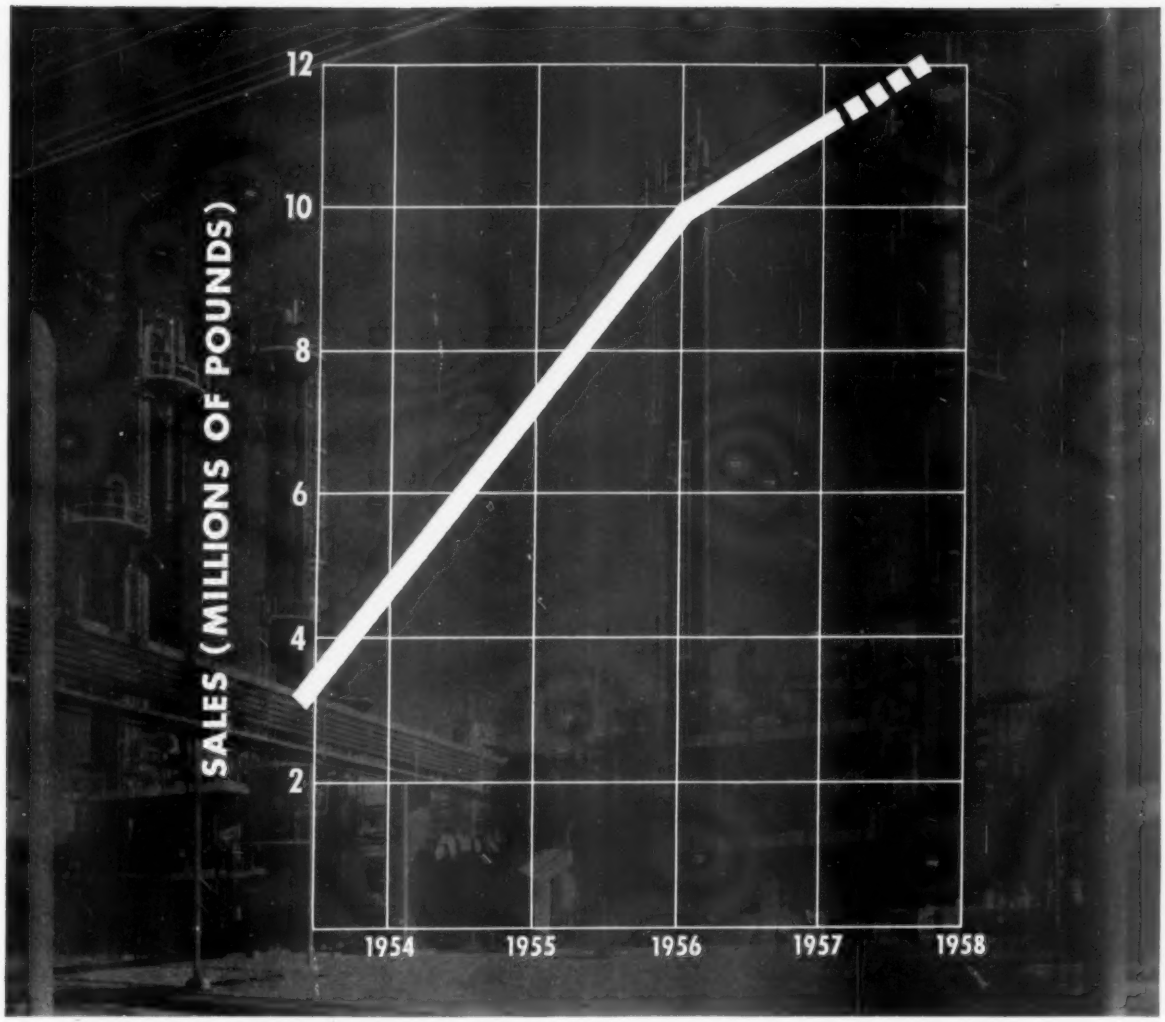
The refinery's offshore crude terminal is located in water about 60 ft. deep, allowing clearance for the largest supertankers. This moderate depth, offering anchorage for tankers, results from a coral shelf that extends well out from the shore. The Hawaiian Islands, being of volcanic origin, more commonly drop off precipitously to a very deep ocean floor.

From the shore to the refinery is another 9,000 ft., giving the crude pipeline a total length of 19,000 ft. It will be at least 24 in. in diameter, handling about 24,000 bbl. an hour. Its cost will exceed $1-million. While this extensive line would not have been needed at the Sand Island site, a new wharf would have been needed.

Processing units for the 32,000 b/d refinery will be relatively conventional, except that there is no present provision for a catalytic reformer.

The crude distillation unit will handle 32,000 b/d. The Model IV fluid catalytic cracking unit (licensed by Esso Research & Engineering Co.) will have a 12,000 b/d capacity. Other processing units, for which capacities have not been announced, include sulfuric acid alkylation, catalytic polymerization, and elemental sulfur manufacture. A catalytic reforming unit is still under consideration.

Other facilities under consideration



GOVERNMENT FIGURES PROVE AMAZING GROWTH OF DALPAC-TYPE ANTIOXIDANTS

Figures of the U. S. Tariff Commission show the astounding growth of di-tert-butyl-p-cresol in just three years—almost tripled!

Dalpac 4, Hercules di-tert-butyl-p-cresol, has firmly established itself as a leading antioxidant in many industries where hydrocarbon stability is a problem. Petroleum refiners, for example, rely on Dalpac to inhibit gum formation, stabilize gasoline color and prevent engine deposits. They use it in turbine and transformer oils to prevent deterioration. Dalpac 4 has no effect upon electrical properties, which makes it ideal for use in transformer oils.

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include a barrel-filling and reconditioning unit. Truck-loading facilities will be at a minimum, as little shipping will be done by truck.

Utilities for the refinery will include 2.5-million gal. a day of water, costing about $150,000 annually, and $650,000 worth of electric power annually, which will be supplied by Hawaiian Electric Co.

Prime contractor for the process equipment is Bechtel-Hawaiian Dredging Co. (a joint venture between Bechtel Corp. and Hawaiian Dredge Co.). E. E. Black is the contractor for construction of the office, warehouse, shop, laboratory, and other auxiliary buildings.

Antipollution plans rate high priorities in the Barber's Point refinery project.

The company believes that its pollution controls will be more complete than in any other refinery in the world. Little or no odor is expected from the refinery operations. But, if there is some occasional odor, it will normally be swept offshore by the prevailing winds.

Specific measures planned to prevent pollution include: tanks for gasoline and other light products to have floating roofs; all waste separators containing light distillates to be covered to prevent air pollution; all gasoline pumps to be equipped with mechanical shaft seals; hydrogen sulfide to be recovered to make elemental sulfur; cat cracker flue gas to be completely incinerated; electrostatic precipitators to remove dust from cracking unit flue gases; and a closed safety relief discharge system to return gases to refinery fuel.

Also, the company reports that it will spare no effort or expense to make the refinery a model industrial installation—model and inconspicuous—in keeping with the scenic beauty of the islands. Tanks and refining units will be painted in pastels, and grounds will be landscaped.

Refinery products will include gasolines, jet fuels, diesel oils, stove and furnace oils, fuel oils, LPG, and asphalt.

Gasoline will include Chevron, Chevron Supreme, and military. Also, there will be aviation gasoline, two grades of jet fuel, two grades of diesel oil, and several grades of fuel oils.

Packaged products, greases, lubricants, and specialty products will continue to be imported from the U.S.

Two parallel products pipelines, each 8 in. in diameter and 22 mi. long, will connect the refinery to terminal facilities in downtown Honolulu.

One line will handle light products, the other will handle fuel oils. Customers along the line will also be served; these include four airports (map, page 28). Though the line is sized for economical handling of initial refinery output, it will be able to handle expanded capacity when needed by the addition of more pumping equipment.

No cost estimate is available for the products line, as right-of-way negotiations are still in progress.

Refinery construction and operating labor will be drawn from island residents to the fullest extent possible.

The construction payroll for the $40-million refinery is expected to run between $8-million and $10-million over the two-year construction period. Some 400 to 600 men will be required throughout construction, with a peak force of up to 1,000.

The payroll for the permanent staff of 225 (about 200 of the staff being islanders) will run about $2-million annually.

Maintenance cost of the completed plant is expected to run about $850,000 annually, including $600,000 for maintenance supplies (mostly from local dealers), and $250,000 in contract work (mostly to local contractors).

Socal is noncommittal concerning future expansion plans for its Hawaiian refinery—other than that the refinery is expected to grow with the growth of the market.

The market, as defined by Socal, will take in the entire mid-Pacific area as well as the Hawaiian Islands themselves.

Socal has been marketing in Hawaii since 1880, and has had a bulk plant there since 1900. In 1954 it decided that the market was large enough to make a local refinery "marginally" economically feasible.

Today, the company says the refinery is still "marginal," and will be for some years. But Socal is confident that there will be a good payout in the long run.

The Hawaiian Islands fuels market is strongly competitive. It has had a healthy growth of about 15% a year over the past four years.

The present market is estimated to be about 45,000 b/d for combined civilian-military use. No figures are given for the wider mid-Pacific area.

Socal is the leading marketer on the West Coast of the U.S., with 28% of the area's gasoline sales. It hopes that the new Hawaiian refinery will serve to give it a strong competitive advantage in Hawaii and the mid-Pacific in future marketing competition.

These synthetic detergent storage tanks resist corrosion because they're made from Stainless Steel, USS 18-8, Type 304.

To safely store synthetic detergents, we turned to Stainless Steel

"We make synthetic detergent that is mildly corrosive to conventional metal tanks," says Mr. L. R. Henry, Maintenance Engineer at the Atlantic Refining Company "Ultrawet" Plant in Philadelphia. "We have tried other metals and sprayed-on coatings. In our experience, Stainless Steel tanks have given the best protection yet against corrosion and product color deterioration. We've had these Stainless tanks for more than four years without any corrosion problems. We expect them to last about three times as long as conventional tanks."

If corrosion has cut short the service life of your equipment, replace it with Stainless Steel. In the long run, it costs a lot less because Stainless Steel lasts a lot longer. And if you want to be positive of service-tested quality, specify USS Stainless Steel.

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United States Steel Export Company

USS United States Steel

Oil Shale Makes Cement

A small but thriving shale oil plant is operating today at Dotternhausen, West Germany, to supply both fuel and raw materials for cement manufacture.

The only place in Germany where oil is extracted from oil shale today is at the Portlandzementwerk (Portland cement plant) of Rudolf Rohrbach, 60 mi. south of Stuttgart, in southwestern Germany, according to a report by Dr. Tell Ertl, mining engineer of Grand Valley, Colo. The plant is in sight of the picturesque Hohenzollern Castle, ancestral seat of the former German Kaisers.

The plant was started in World War II as a belated attempt to supplement Germany's dwindling oil sources, both natural and synthetic.

A crash program was put into effect, and many retorting processes were tried, including underground rooms, Meiler (long oil shale piles on the surface of the ground), Lurgi-Schweitzer, and Otto crossflow retorts.

Underground retorts and retorting in piles proved unsuccessful, because the inability to control the flow of the retort gases resulted in a yield of only 30% to 40% of the potential oil in the shale.

The Lurgi-Schweitzer retorts, based on a batch process invented shortly after World War I by George Wallace, and used by the U.S. Bureau of Mines as its experimental Colorado retort, proved much more successful. But these retorts, because they use a batch process, are not economical for a modern plant, according to Ertl.

The Otto crossflow retorts were put into operation in Dotternhausen in 1942. They have been in operation continuously since then except for postwar dislocations, and have operated cheaply and efficiently, Ertl says.

At present, the plant has six retorts, with a capacity of 52 tons a day each of oil shale. Five of the retorts are on stream continuously.

Raw shale is crushed to particles less than 1½ in. and more than ⅜ in. in diameter. Fines made during the crushing process supply argillaceous matter, which is mixed with limestone to make a standard cement.

Production from the plant is about 10 tons a day of shale oil (about 60 b/d) and nearly 4-million standard cu. ft. daily of an 85-Btu.-per-cu.-ft. gas. This oil and gas supply the heat requirements for the entire cement plant, which produces about 1,000 tons a day of cement.

The low-calorific-value oil-shale gas is burned with the addition of some shale oil to produce the steam that is used in oil shale retorting, as well as in other portions of the cement plant.

Residue from the retorted oil shale, when ground, produces a high quality pozzolan cement.

Oil shale found in southwestern Germany is a dark, cleavable marlstone. As in Colorado oil shale, the inorganic matter is half carbonates; the other half is chiefly silica and aluminum silicates. However, it contains only 10 to 14 gal. of oil per ton by Fischer assay, compared to as high as 30 gal. per ton for Colorado oil shale.

The residue from retorting this oil shale makes a cement which is especially valuable for underwater uses. In quality and strength, Ertl says, it surpasses specifications.

Because of increased demand for cement and energy, two additional oil shale retorts are being built at the plant.

Two factors helping the plant to prosper, and expand, are the character of the oil shale and of the plant itself.

The shale oil produced is unlike the Colorado shale oil in that it has a specific gravity of 0.89, flows at 15F, and has presented no problems of polymerization or gunking.

The plant proper is a model of automation. The oil shale retort and steam plant require only four men per shift.

What's New / IN PROCESSING

The first shipment of crude has been made to the refinery that Cities Service Oil Co., Ltd., is currently constructing at Toronto, Ont.

The oil delivery is in preparation for refinery operations which are expected in the near future. Interprovincial Pipe Line Co. made the delivery through a 2¼-mi. line connected to its Sarnia-Port Credit line.

•

Standard Oil Co. (Ohio) now has a new systems engineering section, within its process engineering division, to provide more effective methods for the control of refinery process operations.

The new section will include 16 engineers. Its activities will be directly concerned with the company's recently arranged cooperative development study with Thompson-Ramo-Wooldridge Products Co.

Duties of the section will be the development of new and improved control systems, design (both process and mechanical) of these systems, consulting and service support to the refineries and other technical divisions in the field, and coordinating activities of the manufacturing department.

•

At last there is definite proof that a thin lubricant film is present at all times in the operations of gears at high speeds and under heavy load conditions.

Using a radioactive-tracer technique and a specially designed 30,000-rpm. test machine, V. N. Borsoff, a Shell Development Co. engineer, found two types of films, he reported to the recent joint meeting of the American Society of Lubrication Engineers and the American Society of Mechanical Engineers, in Los Angeles.

One film is a thick one, found between gears operating under normal conditions. The second film is an extremely thin, "boundary" layer of lubricant, which is found when gears are operated at high loads.

•

U.S. Oil & Refining Co. has plans for a new asphalt plant at its Tacoma (Wash.) refinery.

The estimated cost for the plant is $750,000. Contracts for tankage, process units, and loading facilities will be let within the next few weeks. Construction is expected to be completed by the end of February, 1959.

•

Nitroparaffins can double the power now developed by automobile and diesel engines, according to experiments conducted at the University of California at Berkeley.

The nitroparaffins offer an improvement over conventional hydrocarbon fuels, according to E. S. Starkman, associate professor of aeronautical engineering at Berkeley, because they carry part of the oxygen needed for

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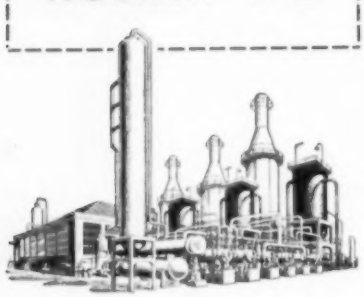

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combustion within their chemical structure.

Nitromethane promises to be the best of the nitroparaffins in terms of power production, says Starkman.

•

Humble Oil & Refining Co. has obtained rights to the Schoch acetylene process.

Dr. E. P. Schoch, chemical engineering professor emeritus for the University of Texas, sold exclusive rights for his process to Esso Research & Engineering Co. for an undisclosed price. Esso Research, in turn, granted rights to use the process to its affiliate, Humble.

The Schoch process converts petroleum gases into acetylene under the influence of an electrical discharge.

•

Continental Oil Co. plans to expand and modernize its lube compounding and packaging plant at Ponca City, Okla.

Plans include a new warehouse and a new automatic blender and homogenizer. The cost of the project is estimated to be about $750,000. Work is scheduled for completion by fall of 1959.

•

Solid rocket fuels will probably replace liquid types for purely military uses, such as long-range missiles, according to Eger V. Murphree, president of Esso Research & Engineering Co.

Missile systems using solid propellants, generally resembling synthetic rubber, can be handled, stored, and launched more easily than their liquid counterparts, says Murphree.

For outer space travel, he says, "it is anticipated that liquid propellants will play a very important—if not dominant—role."

•

Some companies will forge ahead because of automation, while others, failing to realize its potentialities, will fall by the wayside, says C. H. Thayer, vice-president in charge of manufacturing for Sun Oil Co.

As long as the competitive enterprise system continues, automation at an increasing rate is inevitable, Thayer told a recent meeting of the Wilmington (Del.) chapter of the Society for the Advancement of Management.

Older plants are harder to automate than new ones, he said, but high corporate taxes, inflation, and the pressure placed on corporations by the Internal Revenue Bureau to stretch depreciation over a longer period of time make automation of older plants necessary.

•

General Motors Corp.'s Allison division is well advanced in production planning for manufacture of a heavy-duty gas turbine engine, according to GM's president, John Gordon.

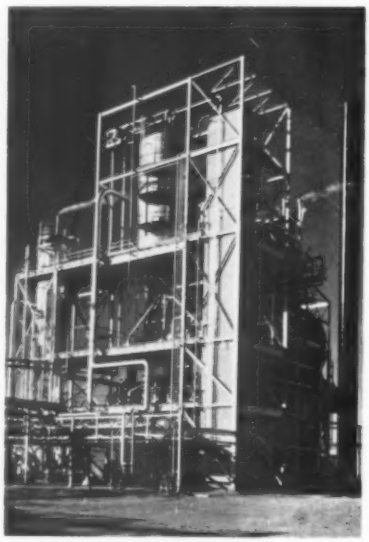
The gas turbine engine, called the Whirlfire, will be available for use in military vehicles, highway-construction equipment, stationary engines, and heavy-duty trucks.

However, according to Gordon, a turbine engine for passenger cars is "more than five years away."

•

Fiber Industries, Inc., new name for Lindum Fibers Corp. (PW—Oct. 3'58,p78), will build its Teron polyester fiber plant near Shelby, N.C.

The plant will be 7 mi. south of Shelby and 3 mi. north of the South Carolina boundary. Eventual capacity of the plant will be 40-million lb. a year, with the plant being brought into production by stages. Construction work on the first unit is scheduled to begin in early 1958.



New Tidewater Unit

A new steam plant, able to burn fluid coke, fuel oil, or refinery gas (individually or simultaneously) has been completed at Tidewater Oil Co.'s Avon (Calif.) refinery. The plant is the final unit in a three-year expansion program at the refinery, which included a fluid coker, gas plant, hydrodesulfurizer, cat reformer, and other facilities.

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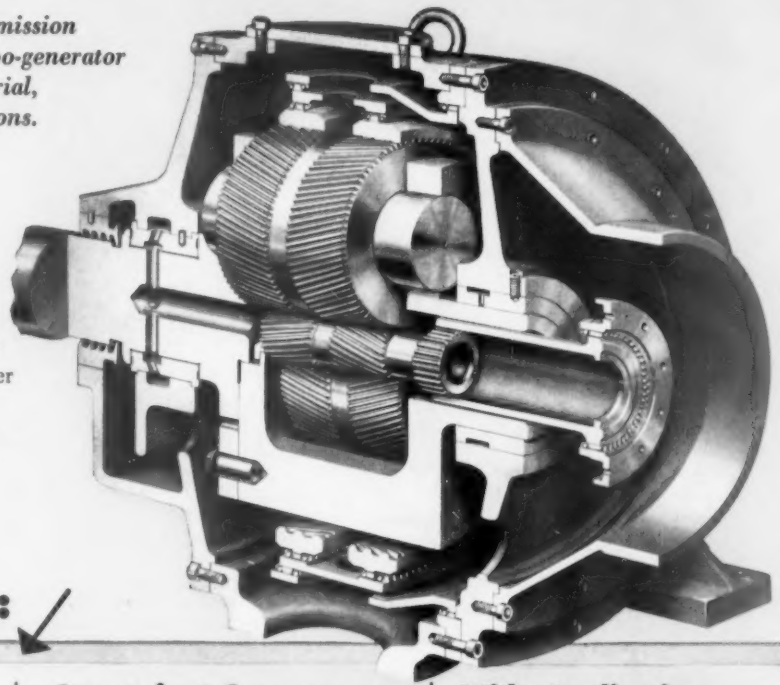

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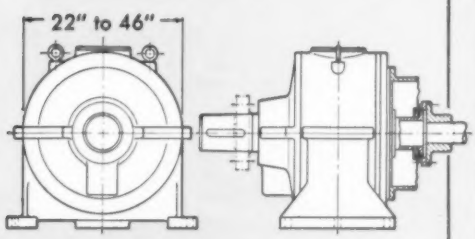

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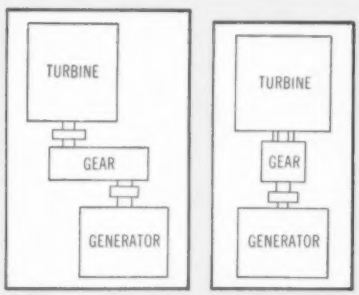

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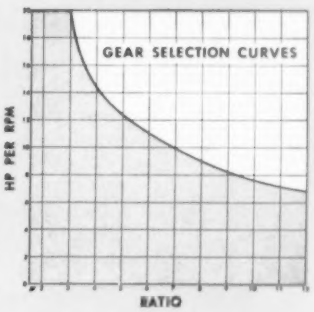
Capacity range shown in shaded area on chart below. For other applications, contact your De Laval Sales Engineer.



For further details, write for Bulletin 2400.

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New Pipeline Frontier: Airports

The jet age opens for American commercial aviation next week, and with it comes a new frontier for pipeliners—the need for special lines to airports to satisfy the great fuel appetites of the jet airliners.

Pan American World Airways will be the first American airline to offer "pure" jet transportation, when it begins flights of its new Boeing 707s in New York-to-Europe service Oct. 26.

But if PAA is first, it won't be alone as a jet carrier for long: By the end of 1961, a total of 254 "pure" jet airliners will have been delivered to U.S. airlines.

And one foreign airline, BOAC, already has "pure" jets in trans-Atlantic service; other foreign lines will follow this example shortly.

The fact that such jets will need roughly three times the fuel gallonage as their piston-engined predecessors to fly the same distance has had a high place in oil-industry thinking for some time (PW—Jun.7'57,p37). Pipeliners, of course, have had a special interest in the possibility that such increased airport fuel needs would require pipeline transportation.

A special pipeline system for air fuel is already in operation between the El Segundo (Calif.) refinery of Standard Oil Co. of California and Los Angeles International airport.

The system is only 4 mi. long. It's made up of three 4-in. lines, which now carry avgas to the United Air Lines, the Pan American, and the Continental Air Lines maintenance bases at the field.

The lines are available for use in jet fuel service.

Other small-diameter lines to airports are now being built. Examples: the Port Everglades-to-Miami Airport line, and the extension of Humble Pipe Line Co.'s line from Irving, Tex., to Love Field, near Dallas.

The Florida line, being built by Everglades Pipe Line Co., will be an 8-incher designed to handle about 50,000 b/d of a range of products, including, some day, motor gasoline for metropolitan Miami. Initially, however, its main function will be to carry avgas and jet fuel from the Port Everglades ocean terminal to the Miami airport.

Humble is getting ready to lay a special 5-mi. extension of its products system from Irving, a suburb of Dallas, to Love Field. The extension will actually be a double line, one 4-incher to be used for avgas, another 4-incher for jet fuel.

Pipelines to other municipal airports—especially where sources of supply are not too distant—are already being considered.

There's been some consideration given to a plan to link Newark (N. J.) airport with one of the nearby Linden (N. J.) refineries by pipeline.

And with N. Y. International Airport (Idlewild) already in use as a jet stop, there's talk of linking that airport with Linden plants by a pipeline across New York Bay.

Similar thinking is going on for the supply of several other airports around the country.

The main reason for the increasing attractiveness of such pipelines is that tank trucks in many cases won't be able to provide efficient delivery to airports in the future.

The volumes involved are getting too big for an efficient tank truck operation, according to E. C. Waterman, Socal's chief engineer for marketing services:

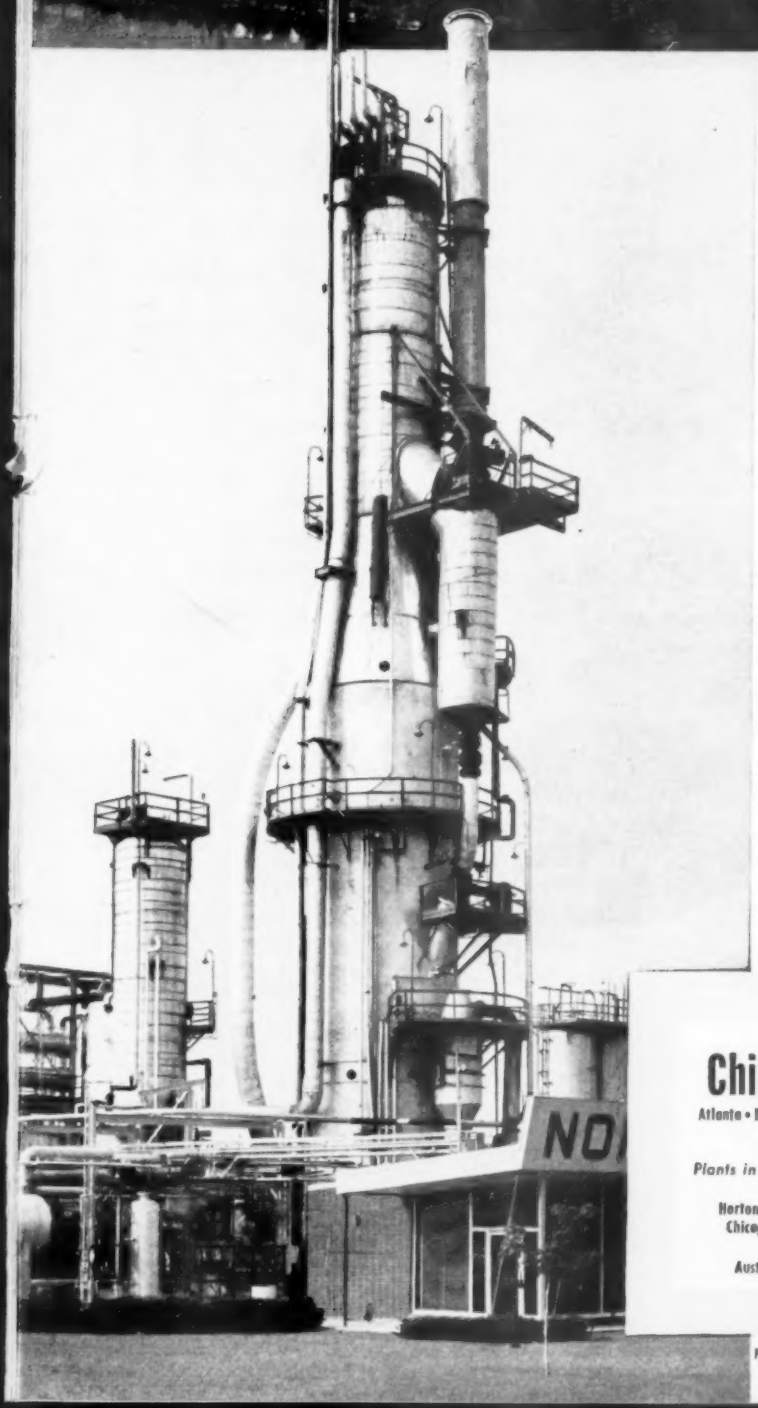
"The decision to use pipelines instead of trucks is not really a matter of dollars and cents. You won't make any money using pipelines over trucks, but it's better operations."

An example: A jet liner leaving Los Angeles for New York will have to take about 45,000 gal. of fuel. With tank truck capacity what it is, about five or six trucks would be needed to fill just one plane. With all the other trucks needed out on the field—such as food and baggage trucks—it's felt that the tank truck system must go.

As a result, most airports are installing hydrant-type fueling systems

20 CB&I STRUCTURES

serve refinery expansion at Twin Cities



CB&I tanks and towers keep pace with NORTHWESTERN growth

Over the past 10 years CB&I has built storage tanks for nearly 900,000 barrels of crude oil and petroleum products for the fast-growing Northwestern Refining Co. of St. Paul Park, Minnesota. CB&I also built the reactor-regenerator for the refinery's modern UOP cracking unit, shown at left.

Long-term CB&I customers can plan refinery expansion with confidence that CB&I-built structures will meet their continuing demand for progress and perfection. A single responsibility for engineering, fabrication, metallurgical and erection detail—*CB&I craftsmanship in steel*—means that CB&I storage and processing structures provide greater efficiency and maximum service life.

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Top: CB&I-built storage tanks at Northwestern include 80,000 bbl. Horton® Floating Roof crude oil tanks and jet fuel storage tanks.

Left: UOP Cat Cracker at Northwestern includes CB&I-built 10-ft. diam. reactor, 16½-ft. diam. regenerator.

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Work on such systems is either under way or planned for a host of municipal fields, including those at New York, Chicago, Miami, Los Angeles, San Francisco, Seattle, and even Honolulu and Anchorage.

And chances are such systems will be installed at many more fields in the years ahead. Marvin Whitlock, vice-president of American Airlines, recently said that the hydrant systems "have many advantages" over tank truck transportation, although they "require substantial capital investment."

Nevertheless, he pointed out, "none of the equipment currently being used for gasoline can be economically adapted" to fueling in the jet age.

Here's how a typical hydrant fueling system is set up:

Bulk storage, segregated according to suppliers, is installed at some convenient place at the airfield. On demand of a user, the proper brand of a given air fuel is pumped by pipeline to fixed hydrants at fueling points on the airport's aprons.

Typical pumping rates into the planes from such systems are usually between 1,000 and 1,200 gallons per minute.

Future airport hydrant fueling systems, however, are now expected to have pumping rates as high as 3,000 gpm.

Pumping jet fuel can be a tricky business, however.

Careful control of the flow is necessary when moving jet fuel because of its tendency to flash. And it's also important to minimize the possibility of buildup of static electricity around a jet fuel pipeline system for the same reason.

Furthermore, when jet fuel is moved through lines carrying other products as well, special precautions must be taken against its contamination. Even the smallest deviation from specifications in the jet fuel can be a critical step.

Even when the jet fuel moves through its "own" line, the pipeliner can't be too careful about contamination from foreign matter.

An airlines executive recently explained that jet fuel must be "clean of foreign matter such as water, rust, or dirt of five microns or greater in diameter." That's a fraction of the diameter of a human hair.

"Equipment is available for this degree of filtration," according to the same executive, "but completely new handling techniques will be necessary."

Fortunately, jet-fuel pipeliners have operating experience to fall back on —some 22 Air Force bases are now linked to their sources of supply by such special lines.

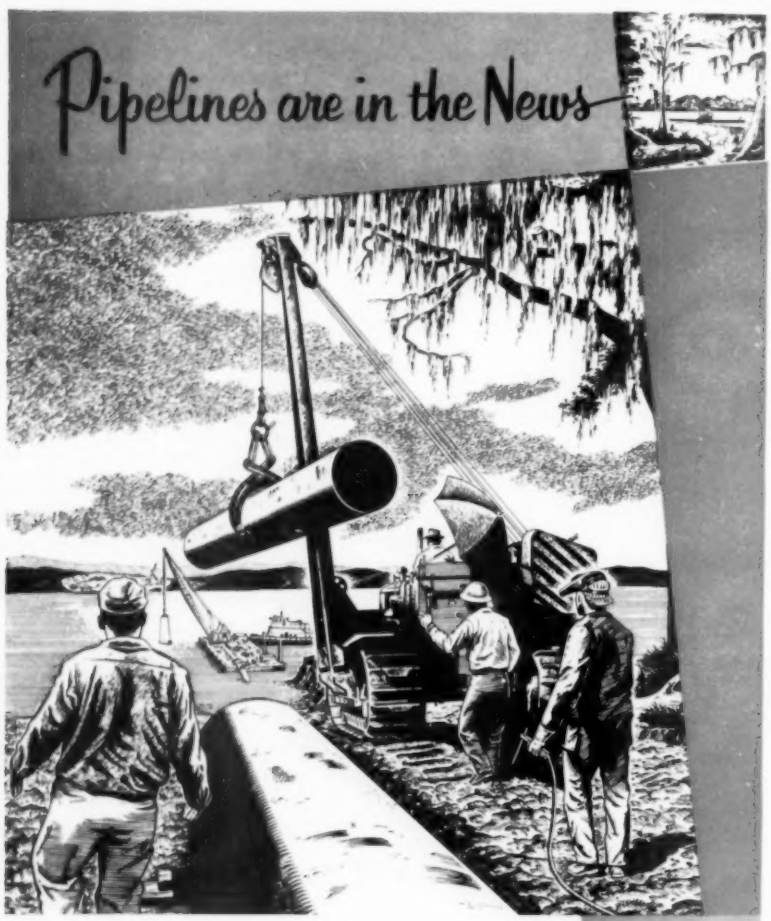
The Air Force started to have such lines built about four years ago, figuring that it could save about $1-million a year in fuel costs by replacing older delivery systems with the pipelines (PW—Sep.6'57,p37).

The Air Force still has a long way to go to complete its planned use of pipelines to airfields. When it started its pipeline plan, it intended to tie 43 air bases to their sources of supply by pipeline.

The latest Air Force base to get pipeline air fuel service is Hunter Field near Savannah, Ga. (PW—May30'58,p40).

Nevertheless, all airports won't be linked to their sources of supply by pipeline. There's still good reason to retain the "traditional" air-fuel delivery systems at many airports.

At many airports, fuel will always be delivered by truck or barge, mainly because of the long distance to the nearest refinery. San Francisco International Airport is a good example: Fuel will continue to be delivered there by barge because it would be "out of the question" to pay for a pipeline all the way from the refinery at Richmond, Calif.—especially when the barge route is convenient to both refinery and airport.



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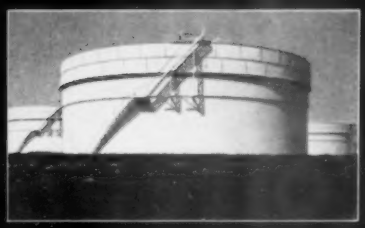

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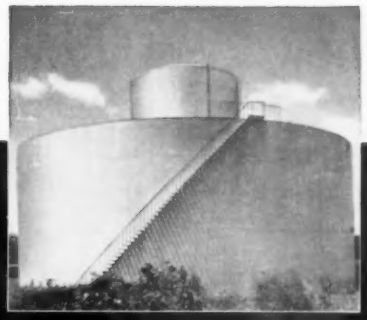

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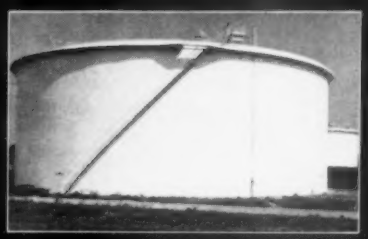

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Canada-California Gas Route Seems Set

The pipeline path for movement of natural gas from Western Canada to the U.S. West Coast now looks to be well staked out—at last.

For about a year and a half, all kinds of plans have been hatched to carry gas from the producing areas of Western Canada to the large, fast-growing markets along the U.S. West Coast, particularly in California (PW—Jul.19'57,p11).

However, none of the proposals have received the necessary endorsement of provincial and Dominion regulatory bodies—mostly because Canada is still studying the problem of where it should market its mineral resources.

Two Canadian companies that formerly sponsored rival plans to move the gas, Westcoast Transmission Co., Ltd., and Alberta & Southern Gas Co., Ltd., will now work together to build a 105-mi., $40-million line from Alberta gas fields to the U.S. border (PW—Oct.17'58,p16).

Westcoast and Alberta & Southern last week announced formation of Alberta Natural Gas Co. to build the 36-in. line from the Alberta-British Columbia border, in the Savannah Creek area, through Crowsnest Pass to Kingsgate, B. C., on the Idaho border, near Eastport, Ida.

The parent companies said they formed the new subsidiary on the basis of "economic studies showing that substantial savings in transportation costs through British Columbia could be accomplished under the joint-use arrangement.

From the Canadian-U.S. border the Alberta gas would move through the Pacific Northwest-El Paso system all the way to California markets.

At present, the Pacific Northwest-El Paso system winds its way south from Washington state through Idaho, Wyoming, and Colorado. A connection to this system from Kingsgate to Spokane is planned.

El Paso has also announced plans to build a link from this system at Rock Springs, Wyo., to a point on the California-Nevada border just southwest of Las Vegas (PW—Aug.8'58, p16). This new line would move Rocky Mountain as well as Canadian gas to the California utilities.

Westcoast and Alberta & Southern say they will buy Alberta gas independently of each other, with Westcoast sending its gas to the Southern California market and Alberta & Southern earmarking its gas for northern and central California market served by Pacific Gas & Electric Co.

The chances for approval of the new Canadian plan—from both Canadian and American regulatory bodies—now appear encouraging.

First of all, although "economic studies" prompted the Westcoast-Alberta & Southern cooperation, a recent "hint" by the Alberta Oil & Gas Conservation Board that such a move might be in order(PW—Sep.19'58, p18) certainly helped the idea along.

It's now felt that the Westcoast-Alberta & Southern proposal will have no difficulty in getting the board's approval.

Next hurdle would be approval by dominion officials, but this seems no great obstacle either. The Borden Commission, which is studying the Canadian energy picture is said to have passed the word that export of Canadian gas to U.S. markets is necessary for a healthy Canadian gas-producing industry.

And in the U.S., Federal Power Commission approval of such a project is expected in the interest of patching up the strained relations which resulted between the two countries as a result of the recent import restrictions put on Canadian crude.

Approval of the Canada-to-California gas plan would tend to dampen chances of early approvals for projects to bring gas to the West Coast from other areas.

Transwestern Pipeline Co., for instance, was formed earlier this year (PW—Apr.18'58,p17) to carry up to 640-million cu. ft. of gas daily from West Texas and the Four Corners area to California. And more recently (PW—Oct.17'58,p15), Tennessee Gas Transmission Co. came up with a similar proposal to carry gas from two southwestern states to the West Coast.

Should the Canadian proposal and the rest of the El Paso plan bring gas to California first, there's some question as to when other gas transmission systems to the area might be deemed necessary by FPC.

But there's little question that additional lines to the area will be needed some day; El Paso's president, Paul Kayser, recently said that the market for gas in Southern California alone "will require through the year 1961, 600-million cf/d above the amounts covered by applications pending before the Federal Power Commission."

What's New / IN TRANSPORTATION

Larger-scale crude and product transportation between Alaska and the U.S. West Coast began this month.

Last week, the first shipment of Kenai Peninsula crude was loaded at Anchorage onto a tanker bound for the Richmond (Calif.) refinery of Standard Oil Co. of California.

The crude shipment followed shortly after delivery at Anchorage of the first full tanker-load of diversified petroleum products for civilian use. This shipment, which arrived in a T-2 Oct. 4, brought 122,400 bbl. of seven products from the Socal Richmond plant.

•

Permian Basin Pipeline Co. has received Federal Power Commission approval to build $3.5-million worth of facilities to take gas from the Emperor field in Winkler County, West Texas.

Permian will build 60.9 mi. of 16-in. lateral line, 11.3 mi. of smaller-diameter field lines, and nine meter stations.

•

Interstate Oil Pipe Line Co. says its newly-developed caisson for underwater pipeline repairs and connections (PW—Oct.25'57,p58) has passed field tests.

Interstate says that its tests showed the caisson to be "economical, safe, portable, adaptable to sizes of line from 2 in. to 20 in., and adaptable to different depths of water."

•

The city of Medicine Hat, in southeastern Alberta, may buy the Etzikom gas field and its connecting pipeline system to insure a gas supply for itself for the next 30 years.

Medicine Hat's administration has asked the Alberta government for a $6-million loan in order to buy the gas field and pipeline from Asamera Oil Corp., Ltd.

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Texaco Plans Stress Latin America

The Texas Co., which now claims to be the biggest crude oil producer in the U.S., is also pushing development hard elsewhere in the Western Hemisphere, with emphasis on Latin America.

Its activities there are currently at the highest levels in Texaco's history, according to chairman Augustus C. Long—and apparently headed up.

The signpost was Long's announcement that Texaco is considering a $20-million program to double the capacity of its Pointe-a-Pierre refinery in Trinidad, which has already been boosted to 125,000 b/d since it was acquired two years ago (PW—Oct. 17'58,p53).

At the same time, Long disclosed that a projected doubling of the capacity of the Puerto La Cruz refinery in Venezuela is now under way. A 60,000 b/d addition to that plant—owned ⅓ by Texaco and ⅔ by Gulf Oil Corp.—will bring rated capacity to 115,000 b/d, he said.

Latin America accounted for the major part of a 5% gain in Texaco's Western Hemisphere reserves last year. The over-all increase was from 3.2-billion bbl. to 3.4-billion bbl.

Its actual production in Latin America is now 175,000 b/d—as compared with gross domestic crude production of about 480,000 b/d and a current natural gas producing rate of over 1-billion cu. ft. daily.

According to figures Long cited in a speech before the Financial Analysts of Philadelphia, almost all of the gain in Texaco's Western Hemisphere reserves last year was outside the U.S., where reserves increased by only .06%.

As plans for the giant Trinidad refinery expansion indicate, Texaco considers its 1956 purchase of Trinidad Oil Co. "one of the most significant moves we have ever made."

For one thing, Trinoil had substantial marketing outlets throughout the West Indies. "Overnight, it brought us a marketing position that otherwise might have taken a decade to develop," Long said. A Canadian refinery and marketing outlets were also acquired in the purchase—plus additional marketing interests in Britain.

Furthermore, the purchase brought Texaco new sources of oil in Trinidad. Two years ago, Trinoil's output, together with that of Antilles Petroleum Co. (of which Texaco acquired 100% ownership last year) totaled 30,000 b/d. This has been boosted to 50,000 b/d by an exploration and development program that has also "substantially" increased reserves there.

Texaco is "very optimistic" about oil prospects in the Gulf of Paria—on both the Trinidad and Venezuelan sides, where oil finds are now being developed.

Eight producing wells have thus far been drilled in the Trinidad offshore area on a large tract in which Texaco has ⅓ interest.

On the Venezuelan side of the gulf, the first offshore well brought in by Paria Operations, Inc., is an "excellent" producer, with indicated production of "at least 2,000 b/d," Long disclosed. Texaco holds ¼ interest in this new Venezuelan operation, which covers six concessions won last year by a five-company group.

Texaco is the biggest producer in Colombia, and sees prospects also brightening there.

The Barco Concession, Long said, is now producing on a profitable basis, at present about 30,000 b/d. It took 23 years and a total investment of $60-million before the first oil from this tract could be commercially marketed, he noted. Texaco has ½ interest in this concession, which is operated by Colombia Petroleum Co., owned jointly with Socony.

In addition, Colpet is now developing a "highly prospective" new field, with some 8,000 proved acres in the Cicuco area of the Northern Magdalena Valley, according to Long. Twelve wells have been completed so far, with a total production rate of 16,000 b/d. Preliminary estimates put reserves at about 50-million bbl.

Texaco is also continuing to develop its own Velasquez Field, which is currently producing over 30,000 b/d in the southern Magdalena Valley.

Expanded sales operations in Latin America has put Texaco in the top marketing spot in several countries, and have opened up entirely new outlets in others.

Indiana-Saudi Deal Still Pending

Talks with Saudi Arabia over the proposed 60-40 oil concession for Indiana Standard were continuing this week, though terms offered "so far" by the Saudis were called "completely unacceptable" by the company.

Indiana's statement last week that "no agreement has been reached" by its affiliate, Pan American International Oil Co. was its first confirmation of the proposals disclosed by PETROLEUM WEEK a month ago (PW—Sep.19'58,p22). The proposed deal involves part of Saudi Arabia's inland "preferential area," so-called because Arabian American Oil Co. has first refusal rights.

What is at issue is not so much the basic terms as the interpretation of various clauses.

The basic terms insisted on by the Saudis include: integrated operations down to the consumer level; a minimum 60% profit share for the government, to be derived from taxes plus royalty; substantial refining within Saudi Arabia; establishment of petrochemical operations; and registration in Saudi Arabia, with company operations subject to considerable government control (PW—Jun.20'58,p41).

Pan American is understood to have agreed to these basics, most of which are already incorporated in the 56-44 Saudi-Japanese agreement concluded last year (PW—Dec.20'57,p34).

But proposals and counterproposals are still being made on both sides on means—and degrees—of implementation.

While Indiana Standard is none too keen about Saudi Arabia's key integration requirements, a partial compromise is under consideration on both sides.

Under one proposal, the integration feature would not be applied from the beginning. Instead, it would be implemented at a later stage, possibly with the Saudi government participating in the risks.

Meanwhile, the new Saudi oil law for newcomers—paralleling the basic terms under discussion with Pan Am—has already been drafted and circulated to international law circles for checking.

Saudi Government sources have made clear that the new law will not be applied retroactively to Aramco. Aramco's operating terms are covered by a different, 50-50 profit-sharing concession agreement with the government.

THREATS OF WAR are nothing new to this plant, with its concreted tanks and small tankcars. This . . .

Formosa Refinery Will Expand

TAIPEI—Chinese Petroleum Corp. is going ahead with expansion plans for its Kaoshiung refinery despite the imminent danger posed by the threat of Communist Chinese air attacks.

Next year, the plant will start producing aviation gasoline. A sulfur recovery plant with sulfuric acid operation is also projected. Badger Corp., of Boston, has a contract for design and engineering of the new additions, and two loans have been negotiated to cover these costs—$750,000 from Gulf Oil Corp. and $750,000 from the Bank of China.

Today the refinery has a 30,000 b/d crude capacity. But only 20,000 b/d is used to feed the local Formosan market. CPC, which is 100% government-owned, estimates that the installation is worth $40- to $45-million.

CPC's operation is a completely self-contained one: The refinery employs some 2,500 workers who not only run the plant, but produce much of the material needed to keep it functioning—from machinery to bricks.

The refinery boasts a cat cracker (Atlantic Refining process) with a 3,000 b/d capacity, and a 6,250 b/d TCC cracker (Socony Mobil design). Blaw-Knox and Fluor Corp. supplied technical assistance for these projects.

Gulf Oil, Caltex, and Socony Mobil are supplying Middle East crude for the plant under long-term contracts. Gulf is supplying about 50%.

Just this month, the Chinese Nationalists announced that they will start supplying 50,000 bbl. of Navy diesel fuel to the American Seventh Fleet in its patrol duties off Formosa.

(CPC also operates a 40 b/d unit in the northwest, using locally produced crude. It's the only crude turned up on the island despite continued exploration, first by the Japanese, and more recently by the Chinese Nationalists.)

The Chinese Nationalists started rehabilitation of the refinery in 1945, when they took the island over from the Japanese, after 50 years of occupation. With the aid of Universal Oil Products Co., the Chinese added a thermal cracking unit and expanded the topping units.

The program was financed by loans of $2-million from Gulf, $700,000 from Caltex, and $500,000 from the Central Trust of China. The early development program was completed in 1948—just in time to provide capacity that could no longer be used, since the Communists had taken over the markets on the China mainland.

About half of the plant had been wrecked as the result of 800 direct hits in the area by U.S. planes during World War II.

Elaborate Japanese efforts to shore up the refinery against bombing—concrete covered tanks (picture, left), compartmentalized walls, and moving parts of the operation into the shadows of the nearby hills—was all that saved the operation.

Cardenas Will Visit Venezuela

CARACAS—Mexico's Gen. Lazaro Cardenas, the man who expropriated Mexico's oil industry in 1938, has accepted an invitation to visit Venezuela early next year—in the midst of a debate on reform of Venezuela's oil policy.

The bid was extended by a private economic, social, and political organization known as the "Guarico Group," made up of educators, intellectuals, and political figures.

Cardenas' visit will probably add fuel to the current debate on revision of Venezuela's oil policy.

Politicians here discount the possibility of nationalizing Venezuela's oil. But all of the major political parties are calling for at least an increase in taxes on oil companies, as they gear to elect a new government next month.

No decision has yet been made on receiving the former President of Mexico as an official guest.

Venezuela's Ambassador to Mexico had accompanied the delegation that called on Cardenas in Mexico recently to extend the invitation.

But Foreign Minister Rene de Sola —in reply to a protest by a Catholic newspaper—explained last week that the Ambassador did not form part of the delegation, and that the Venezuelan government did not invite Cardenas.

The government, however, will scarcely be able to ignore the presence of Cardenas, who is still a power in Mexican politics, and who enjoys enormous prestige throughout Latin America.

Cardenas had never set foot outside Mexico before a brief trip to Los Angeles last year. He told the Venezuelan delegation he wishes to acquaint himself first-hand with the situation in Venezuela following the overthrow of dictator Marcos Perez Jimenez.

A member of the inviting delegation declared that Cardenas "will do great good by his presence in Venezuela, because he knows the answers to immediate problems, such as those of agriculture and the oil industry."

Three members of the eight-man delegation from the Guarico Group were Communists.

Prominent members of other major parties were also included—with the exception of the Social Christian (Copei) party. Among them was a former Minister of Agriculture.

What's New / AROUND THE WORLD

Iran's Output Hits A Million Bbl. a Day

IRAN—Oil output topped the 1-.nillion b/d mark several days in September, bringing the month's average to a new record high of 904,000 b/d. This is up from the August average of 879,000 b/d, also a record (box).

KUWAIT—Crude output set a new record in September: 1,441,566 b/d. Kuwait's last record high was 1,397,-889 b/d in April.

•

NEUTRAL ZONE—Expansion of American Independent Oil Co.'s export facilities for both crude and products is now completed, the company announced last week (PW—Jun.20'58,p52).

Its new 30,000 b/d export refinery is now operating at the company's Mina Abdulla terminal in Kuwait. The plant, a crude stabilization and fuel oil unit, processes part of Aminoil's share of crude from the Wafra field in the Neutral Zone.

A new sea berth for 100,000-ton supertankers has been installed some 3 mi. offshore. This is served by a 24-in. submarine line, as well as a new bunker line that also serves the old berth closer to shore.

•

SYRIA—New drilling plans of the German independent that holds permits in northeast Syria are unchanged so far by Nasser's cancellation of the J. W. Menhall permits, on which the Syrian-American discovered Syria's first commercial oil (PW—Oct.10'58,p47).

As of last week, Deutsche Erdoel's Concordia was still preparing to spud its third Syrian wildcat, near the Turkish border. Its second is now below 6,500 ft. at a site about 40 mi. south of its first test. The initial wildcat, described as "encouraging," was carried to 11,500 ft. in the Ghouna area of Jezira province.

•

FRANCE—While consumption of most oil products climbed in the period from May through September this year, heavy fuel oil consumption dropped 3% from the same period of 1957.

According to the trade association of French refiners and distributors, consumption of gasoline jumped 14% over the same period last year. Gas oil consumption climbed 7%; heating oil went up 25%; and light fuel inched up 1%.

•

WEST GERMANY—Test runs at Esso's new 70,000 b/d Cologne refinery will start at the end of next month—four weeks ahead of schedule and about a month before completion of the new Wilhelmshaven pipeline.

The first Rhine tankers have already started unloading crude.

•

AUSTRIA—Two areas outside Austria's traditional eastern oil region will get their first tests next Spring with 10,000-ft. wildcats.

No. 1 Uebersbach is scheduled by Rohoelgewinnungs A.G., owned jointly by Shell and Socony, in southern Styria province. The other test is slated by Erdoel Gesellschaft, in Vorarlberg province. The wildcats climax two years of seismic and geophysical work.

•

PAPUA—Formation of a new company has been proposed to raise $11.2-million in Australia to continue a search for oil in Papua that has already cost over $65-million.

British Petroleum Co. and Standard-Vacuum Oil Co., major partners in the operating companies—Australasian Petroleum and Island Exploration—have agreed in principle to cut their holdings in the operating companies from 90% to 50%. Oil Search Ltd., with a 10% interest in the venture, made the proposal following announcement by BP and Stanvac that they would not contribute additional financial support.

•

SAHARA—Fifteen rigs are now at work on development drilling at the Hassi Messaoud oil field, where production reached 11,740 b/d in September.

According to the two operating companies, SN Repal and Cie. Franciase des Petroles d'Algerie, output of the field since it first went into production in January now totals 2.4-million bbl. Seventeen wells have been completed so far.

•

TRINIDAD—The first bonus for new oil rights in Trinidad will be paid by a California Standard subsidiary under an agreement announced by Chief Minister Dr. Eric Williams.

For the past year, Trinidad has been considering a new oil law, modeled after Venezuela's, which would make bonuses mandatory. But none has been drafted in final form yet.

Williams said Dominion Oil Co. agreed to pay $5,600 for rights on 1,581 acres in the south and east of the island, plus $3.50 per acre for other lands up to 11,000 acres. Drilling will be started within three months after award of the leases.

•

ARGENTINA—Ferrostaal AG, of Germany, has been awarded a firm $36-million contract for oil equipment, to be delivered over a five-year period to Yacimientos Petroliferos Fiscales. The deal, announced last week, is the latest concluded by the government oil entity. Earlier, it also signed a firm three-year contract with one of the Dresser Industries companies for well completion and servicing, involving from $2.5-million to $10-million.

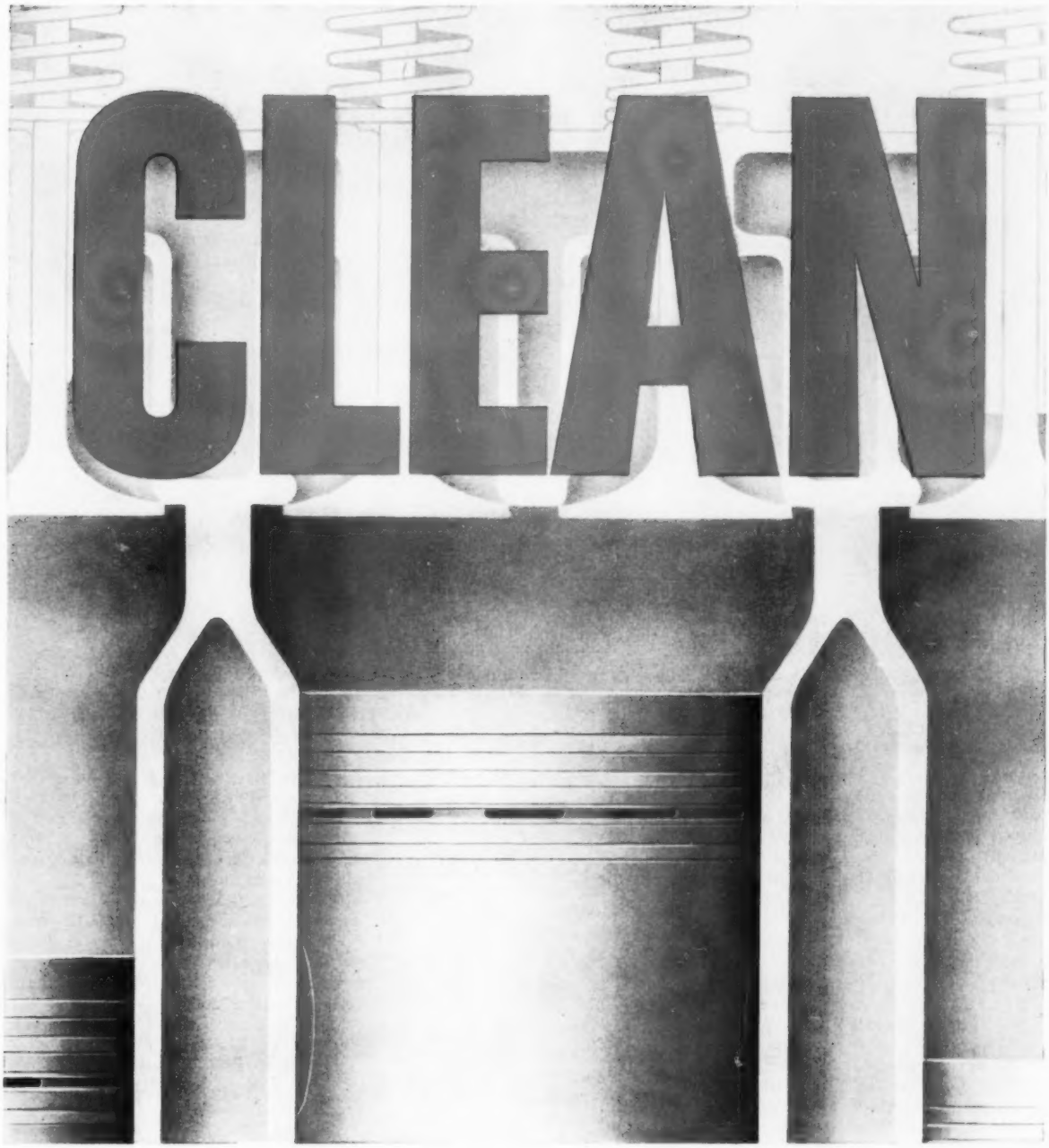
Mideast Crude Output Sets New Record

New crude output records in Iraq, as well as Iran, pushed total production from key Middle East producing states to a new all-time high of 4,204,400 b/d in August.

Despite declines in Kuwait, Saudi Arabia, and Qatar, the month's total climbed 78,800 b/d over the previous record of 4,125,600 b/d, set in March.

Iraq's output continued its steady climb, finally topping its previous record of 764,000 b/d set in October, 1956. Iranian output likewise broke its previous record of 846,000 b/d, set in March, 1958. The totals, in 000 b/d:

	Aug. '58	Aug. '57	July '58
Kuwait	1,378.7	1,292.4	1,353.5
S. Arabia	990.9	1,152.1	1,046.2
Iran	879.0	763.0	793.0
Iraq	787.0	487.6	752.5
Qatar	168.8	147.7	178.3
Total	4,204.4	3,842.8	4,123.5
8-Mo. Avg.	4,037.1	3,273.1	



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PROTOTYPE STATION, in Riverside, Conn., foreshadows company's move to modernize its merchandising approach as . . .

Sinclair Tests New Station Design

Sinclair Refining Co.'s first Connecticut service station—opened last week—unveils the company's plans for some sweeping design and merchandising changes, if top management gives final approval.

With all the gala festivities of a station grand opening, dealer Joseph Briganti opened a new prototype Sinclair station, located on the Boston Post Road (U.S. Highway 1) in Riverside, Conn., near Greenwich. Since it's a prototype, the station is getting top-level attention. There's also another reason: About 20 Sinclair executives live in the Greenwich area.

Sinclair has no definite plans to build more stations in Connecticut, since the company markets through Richfield Oil Corp. in New England.

The station is a modification of an earlier station in Mobile, Ala.—designed by an outside firm, Donald Deskey Associates, of New York. The Mobile station has been in operation for about a year.

"We hope to go ahead and build many more stations like this one, varying the design features as circumstances demand," says a company official. "We'll probably cut the cost of this station by at least 15% before we start building more."

Top management's approval of the new design partly hinges on acceptance of a new Sinclair brand sign.

The brand sign, featuring three check marks and the new Sinclair red and green colors, has been under test for about two years. Final approval is still pending. The change would mean replacement of Sinclair's traditional "H-C" brand sign at all outlets.

At the main pump island is a "little station," or glass-enclosed sales area designed to keep merchandising tools close at hand.

"Since few motorists get out of the car at a station," explains a sales official, "oil companies have long recognized the need to concentrate merchandising at the pump island. This design change reflects our merchandising thinking.

"Essentially, what we have is a little station at the island, with the main station building used for storage, repairs, and additional display."

In the protected sales room at the island are displays of lubes and other automotive needs. Both cash and credit sales can be handled from this room, with a credit-card imprinter installed inside.

The pumps, new on the market, have a TV-like face. A simple alteration at the factory makes a single pump usable as a dispenser for two grades of fuel.

Sinclair designers teamed up with the manufacturer's designers to develop the new pump. Manufactured by the Bennett Pump Division of John Wood Co., the pumps are now available to anyone.

The 54-in.-high pump has a wide glass window, similar to a TV screen. The face of the pump is also equipped with fluorescent lighting.

The flexibility of the pump in dispensing one or two grades makes it possible to install only one pump at small-volume outlets. There is considerable cost-saving by installing one combined unit.

At the Connecticut station there are eight dispensers pumping from two sets of twin storage tanks, with a total 12,000-gal. capacity. Submerged remote pumps "push" the fuel from the storage tanks.

The main island is equipped with an "Eco Islander," a unit which has two automatic reels of hidden air and water hoses, one on either side of the dispenser.

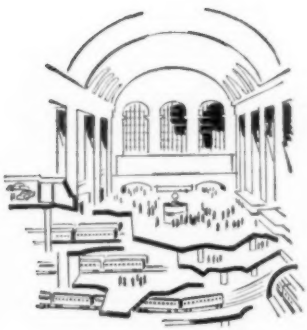
Each pump island also has its own credit-card imprinter for recording sales data.

Also on trial at this new station is on-the-spot issuance of credit cards, using a new-type embossing machine.

Key to this is an Addressograph machine (Class No. 6400) that prepares an embossed plastic credit card right at the station. A direct tie-in line to New York headquarters provides a quick credit check by telephone, while the customer waits.

The keyboard machine embosses the plastic card, records an impression of the card for making permanent metal plates used in billing, and inks

there's more to Cities Service than meets the eye!



A city within a city, Grand Central Terminal includes some 34 miles of underground track, over 80 shops and eating places, more than 300 phone booths, an investment center, a movie theatre, and two art galleries.

Every year more than 60 million travelers pass through the train gates of Grand Central Terminal, New York City. Not many are aware of the complex organization which clears this traffic with maximum safety and minimum delay. The world's tallest subterranean signal tower controls the arrivals and departures of 500 trains a day . . . three a minute during rush hours . . . moving on 78 tracks fanned out on two levels of a 79-acre yard.

Serving travelers is also an important responsibility of Cities Service. Here, too, the biggest job is done behind the scenes. To assure customers an unfailing supply of quality petroleum products requires a vast producing, manufacturing, transporting, research, and marketing organization.

Hundreds of millions of dollars flow annually into these far-flung operations . . . thousands of employees share the job which extends into four continents. It is costly . . . risky . . . arduous . . . but only in this way can the petroleum needs of the public be met – and petroleum, next to food, is the most vital product in America today.

CITIES SERVICE

the embossed data to make it legible.

A completely hand-tooled model of the machine, valued at some $750,000, was provided by Addressograph for the opening of the Connecticut station. But estimated cost of the machine will be only about $2,800 when production begins in about 60 days. Sinclair is considering purchase of one machine for each sales division.

One possible use of this machine would be to rotate it from station to station, for concerted drives to build credit business.

Service bays have three different types of lifts, to handle all automotive models.

The drive-through bays are hidden in the back of the station. In addition to an automatic washing rack, there is one drive-on lift, one free-wheeling lift, and one frame-contact lift (mainly for foreign cars).

The prototype station also has a special area set aside for vending machines. Size of this area at other stations will vary with the type of market.

The vending-machine area next to the main building, is expected to be much larger in those markets where competition puts heavy emphasis on vending machines. Sinclair also is trying to make the machines fit in harmoniously with the rest of the station design. At this station, for example, the soft-drink machine is a special adaptation by the beverage company. The machine incorporates the basic color and design features carried out in the station.

The use of red and green porcelain-enamel steel and the huge, corner lot are other features of the prototype.

The large corner lot on which the station is built is 140 ft. by 113 ft.

"This will be the typical size for our stations from now on," says V. L. Brophy, general manager of retail sales. "In fact, we could use more space here."

There are other features in the station design that go along with the major-company trend to adopt the bright and big look of private-brand outlets.

Lighting is concentrated on the islands, with high-powered fluorescent strip lights under corrugated Fiberglas. Nine sets of modern perimeter lights are VHO (very-high-output) fluorescents.

The lighting at eye level around the islands is 100-foot candles. (This was described by a Sinclair official as "the same as the lighting on the new Socony building.")

The station will operate 24 hours a day, but is expected to get most of its trade from local residents.

There's heavy truck traffic now on the Post Road passing the station, but most of this is expected to switch to the new New England Throughway, which runs parallel to U.S. 1.

There are eight employees at the lessee-operated station (an investor holds the third-party lease).

Dealer Briganti hasn't figured out when his rush hours will be, but he's happy about the 16,000 gal. chalked up in the five days prior to the grand opening. Briganti hired an orchestra so he could have a dance on the driveways the night before his grand opening, but there were so many cars, driving in that "the dance wasn't too successful."

"I'm going to offer free pickup and delivery service," he adds.

What's New / IN MARKETING

Oklahoma Oil Co. is giving away a new premium at stations in the Chicago area: coupons that can be exchanged for certificates redeemable at a large chain of grocery stores.

The Jersey Standard affiliate is going after the female buying power through a tie-in promotion with some 200 Jewel Tea Co. food stores.

One coupon is issued for every gallon of gasoline purchased, or for every 25¢ spent for TBA, lube oil, service, or repairs. After a customer accumulates 100 coupons, they may be traded either at the participating stations or at one of Oklahoma's premium stores for a $1 food certificate. The certificates are as good as cash at the Jewel stores. Oklahoma buys them back from Jewel at face value.

Funds for the promotion came out of Oklahoma's 1958 advertising campaign. Both companies are promoting the premiums through cooperative newspaper, TV, and radio advertising.

Gordon Howell, Oklahoma's sales manager, calls the promotion "most successful, with results exceeding earlier expectations." He adds that the campaign will run as long as customer interest continues.

•

Union Oil Co. of California has begun construction of a $1.5-million terminal in Ketchikan, Alaska, to handle increasing distribution. Scheduled for completion next March, the terminal will have storage capacity for 120,000 bbl. of products. The plant can be expanded to meet Union's projected requirements in southeastern Alaska for 50 years, according to company officials.

Union is the second major oil company to build a modern terminal in the area. General Petroleum Corp. began construction of a 1.5-million-gal. terminal in June.

Millions of dollars of jet refueling equipment is slated for installation at Australian airports, where domestic airlines are rapidly switching over to turboprops.

Shell Oil Co. of Australia has announced plans to spend $1-million on facilities to refuel the new pure jet and turboprop aircraft of domestic and international lines. Shell's biggest expenditure ($500,000) will be at Kingsford Smith Airport, Sydney.

Australia's domestic operator—Trans-Australia Airlines—will be the world's first airline to have an entire fleet of turboprops, consisting of Electras, Viscounts, and Friendships.

•

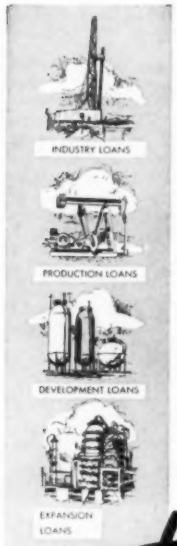
The federal government's General Service Administration has issued an "all-stations" gasoline credit card to 10,800 vehicles operated by employees.

The cards, issued to the vehicle rather than to the individual driver, are aimed at simplifying bookkeeping for the agency and allowing the employee to carry only one card. Oil companies have approved the system, which is under test from July 1 to Dec. 1, reports GSA. If the program works out, GSA will recommend a single-card system for other federal agencies.

•

Sales of replacement tires and retreads will climb this year, in spite of any business-decline effects, according to H. E. Humphreys, Jr., board chairman of U.S. Rubber Co.

Humphreys predicted last week that sales of passenger tire replacements this year would set a new record of 58-million units, 1.4-million above 1957, and in 1959, will probably go over 60-million, he added. A new record of 26-million retreaded passenger tires is expected this year, he said.



Oil Men Call us "Bankers"

but . . . .

BANKERS CALL US "OIL MEN"

COMPLETE ENGINEERING AND OIL DEPARTMENT

W. L. KENDALL — Senior Vice Pres.
W. L. MORRIS — Engineer
A. D. McCALL — Engineer
M. R. BILLINGTON — Ass't Vice Pres.

IN OIL MATTERS — *IT PAYS TO*

Think 1st *of Tulsa*

FIRST NATIONAL BANK & TRUST CO.

SINCE 1895

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

DETERMINATION TO BUILD BETTER PIPELINES . . . A Mark of the Houston Contracting Man

Determination, backed by skill and experience, to build pipelines right has always been a quality of Houston contracting men. Many have been pipelining for twenty or thirty years. Houston Contracting superintendents have been with the Company from 16 to 21 years. You can rely on these men for better-built pipelines.

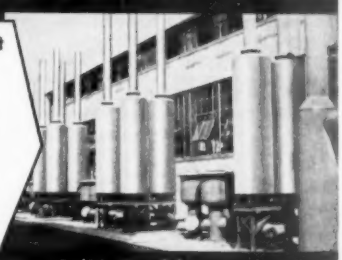
Houston CONTRACTING COMPANY
GENERAL CONTRACTORS
Lorraine R. Forest • R. P. Gregory • Geo. A. Peterkin

OIL • GAS
GASOLINE
WATER PIPELINES

3007 BUFFALO SPEEDWAY
HOUSTON 6, TEXAS

Having Trouble with...

Intake or Exhaust NOISE?

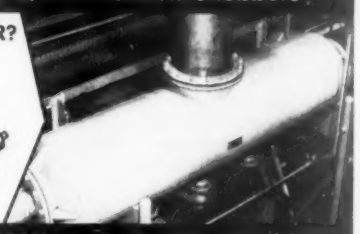


Use B/M Snubbers

Pipe System VIBRATION?

Use B/M Pulsation Snubbers

EXHAUST WATER?



Use B/M Water Separating Snubbers

EXHAUST SPARKS?

Use B/M Spark Arresting Snubbers

Burgess-Manning will analyze your problem and recommend the properly engineered Snubber based on years of research and study into the cause and effect of noise and pulsation.

You Will Find
B/M Recommendations are *Positive*
B/M Results are *Positive*
B/M Guarantee is *Positive*

Submit Your Problems for recommendations

BURGESS-MANNING COMPANY

Sound Engineering *Industrial Silencer Division*

9219 Sovereign Row, Dallas 35, Texas
Libertyville, Illinois

DEPT / Personals

J. EDWARD WARREN has been elected chairman of the executive committee and a director of Cities Service Co., in New York. To accept his new position, Warren resigned as senior vice-president of the First National City Bank of New York. Before joining National City in 1953, Warren was managing partner of King, Warren & Dye, independent oil producers in Midland, Tex. He also served as president of the Independent Petroleum Association of America, in 1949 and 1950. Warren is presently a member of the National Petroleum Council and a director of the American Petroleum Institute and of the Mid-Continent Oil & Gas Assn.

J. E. Warren

D. R. Snow

DALE R. SNOW, Tulsa, was elected a director of Atlas Corp., New York, on Oct. 10. Snow is chairman of Petro-Atlas, Inc., Atlas's oil and gas subsidiary in Tulsa. He also has been an advisor on oil and gas to the parent company for the past several years.

RALPH P. LATIMER will become assistant to the manager of production and exploration for Lion Oil Co., division of Monsanto Chemical Co., El Dorado, Ark., on Nov. 1. Latimer, formerly administrative assistant to Lion's president, **T. M. Martin,** will be located at production and exploration headquarters in Houston. Latimer joined the company in 1949 as supervisor of contracts in the land department, and in 1955 was elected assistant secretary of the company. He is presently secretary of Lion's operating committee. **W. Edwin Cox** will become Lion's manager of public relations, in El Dorado. He succeeds **K. W. Dodson, Jr.,** who retires on Nov. 1. Cox joined Lion in 1945 as assistant advertising and sales promotion manager; since 1956 he has been manager of sales training for the company.

L. RUSSELL MARKS has been elected executive vice-president, and **J. A. O'CONNOR, JR.,** vice-president, of Murphy Corp., El Dorado, Ark. Russell has been vice-president in charge of finance and service since 1955, and O'Connor has been secretary and general counsel of the company since 1954.

HAL S. DEAN is head of El Paso Natural Gas Co.'s new geological and land office in San Antonio. Dean, with El Paso a short time, was formerly located in the San Antonio area as a geologist with **Edwin W. Pauley,** independent oil operator. He was also a staff geologist for Magnolia Petroleum Co., in that city. Other personnel at the new office include: **Bob Sturdivant,** from Midland, landman; **Nolan A. Jeter,** from Midland, geologist; and **J. W. Riddle,** from Sonora, Tex., office manager.

CHARLES W. ALCORN, executive vice-president of Falcon Seaboard Drilling Co., Houston, was elected president of Texas Mid-Continent Oil & Gas Assn. for a second term, at the association's meeting in Dallas this month. Three new vice-presidents in charge of district activities for the organization are: **E. J. Dunigan, Jr.,** Pampa, Panhandle district; **Radcliffe Killam,** Laredo, Lower Gulf Coast; and **John W. Mecom,** Houston, Middle Gulf Coast. All three are independent oil and gas producers.

D. C. CLARK, JR., has been named staff engineer in the technical division at Humble Oil & Refining Co.'s Baytown (Tex.) refinery. He will continue to work in the field of process design of refinery units.

EDWIN K. LUCAS has joined the geological staff of Fain-Porter Drilling Corp., Oklahoma City. He was previously in the geological department of Gulf Oil Corp., in Oklahoma City.

H. A. RANZAU has been appointed manager of the tax division of Carter Oil Co.'s controller's department, in Tulsa, succeeding **T. J. Thurman,** who has retired. Ranzau has been assistant to Carter's controller since 1957. **William C. F. Chambers,** formerly an assistant unit head in the controller's department, succeeds Ranzau.

F. B. Fulenwider

M. S. Pease

FRANK B. FULENWIDER has been named assistant division marketing manager of Tidewater Oil Co.'s seven-state-and-Hawaii western division, in San Francisco, succeeding **MARSHALL S. PEASE,** who has been named manager of the company's San Francisco sales district. Fulenwider was formerly manager of Tidewater's central division sales department, with headquarters in Tulsa. **Charles R. Clark** has become acting assistant district marketing manager in San Francisco, and **George D. Gavin** has been named assistant to Pease.

BRUCE JONES has been named manager of supply and distribution for La Gloria Oil & Gas Co., Houston, subsidiary of Texas Eastern Transmission Corp. For the past year, Jones has been La Gloria's products coordinator; before that he was assistant to the president of McMurrey Refining Co., which was acquired by La Gloria in 1957.

B. Jones

R. L. Feldman

ROBERT L. FELDMAN has been elected executive vice-president of Golden Bear Oil Co., Los Angeles. Feldman will continue as Golden Bear's sales manager, a position he has held since 1948.

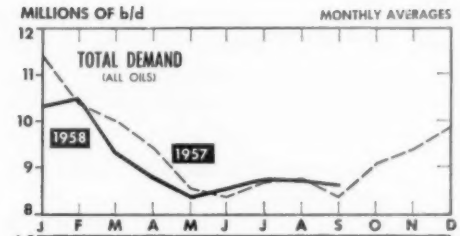
ARNOLD R. MOORE has been named manager of electronic data processing for H. J. Gruy & Associates, consulting petroleum and geological engineers, in Dallas. Moore was formerly associated with the Seeligson Engineering Committee in San Antonio; and has also served as senior engineer in charge of electronic data processing with R. K. Guthrie & Associates and the Data Processing Center, both in San Antonio. In his new position, Moore is responsible for programming of machine procedures for the company's drilling, production, development, and other technical services.

CHARLES E. POWELL has been named assistant superintendent of gasoline plant operations in charge of District 1, in the natural gasoline division of Cities Service Oil Co. (Del.). Powell, with headquarters in Wichita, will be responsible for gasoline plants at Burrton and Wichita, Kan., and Blackwell and Guymon, Okla., and for an underground storage terminal at Hutchinson, Kan. **Ed B. Lord,** formerly superintendent of the West Seminole (Tex.) gasoline plant, succeeds Powell as superintendent of the Pampa (Tex.) plant. **Ben W. Montgomery,** formerly superintendent of the East Chico (Tex.) plant, has been transferred to West Seminole as plant superintendent, succeeding Lord. **Ed Wrangle,** superintendent of the Chico plant, will also assume responsibility for the East Chico plant.

DR. EDWARD T. SEVERS has joined the product development staff of Sun Oil Co.'s research and development division, at Philadelphia. For the past three years, Severs has been technical director of Natvar Corp., Woodbridge, N. J., manufacturer of plastics and coatings for electrical insulation.

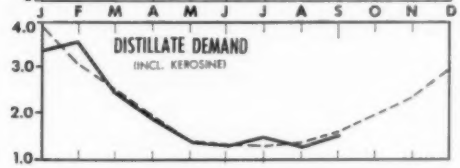
PETROLEUM WEEK'S

Fingertip Figures



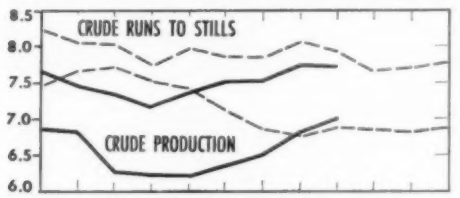
TOTAL DEMAND

Latest 4-week average	8.963
Year ago	8.769



DISTILLATE DEMAND

Latest 4-week average	1.652
Year ago	1.786

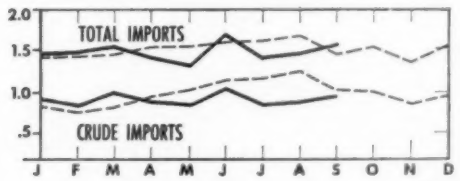


RUNS TO STILLS

Latest week	7.613
Previous week	7.723
Year ago	7.861

CRUDE PRODUCTION

Latest week	6.893
Previous week	6.874
Year ago	6.747

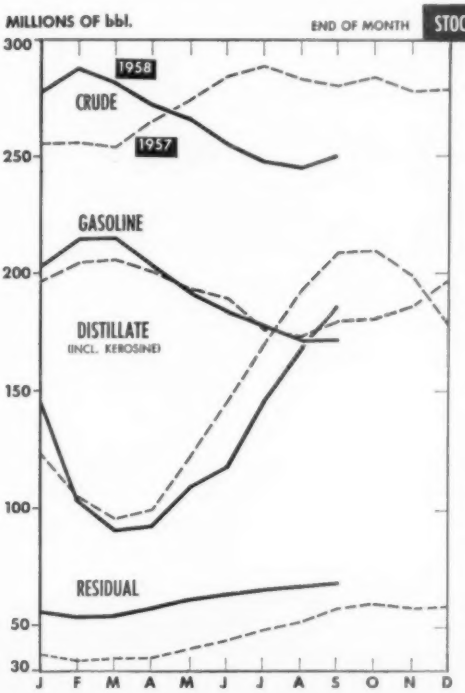


TOTAL IMPORTS

Latest week	1.520
Previous week	1.509
Year ago	1.539

CRUDE IMPORTS

Latest week	.928
Previous week	.988
Year ago	1.120



CRUDE STOCKS

Week-ended 10-11	252.3
Previous week	250.3
Year ago	283.3

GASOLINE

Latest week	170.4
Previous week	172.9
Year ago	177.9

DISTILLATES

Latest week	192.9
Previous week	190.1
Year ago	208.5

RESIDUAL

Latest week	68.0
Previous week	69.0
Year ago	59.0

A growing number of petroleum economists now foresee a strong growth in demand during the rest of 1958.

Earlier, some had predicted that, based on normal winter weather, demand for distillates in the last three months of 1958 and the first three months of 1959 would run strong (PW—Oct.10'58,p11).

But now they are predicting an upturn in demand for all petroleum liquids, based on industrial recovery.

For the immediate future, the Bureau of Mines predicts that demand for domestic crude in November will be up 3.4% over last year and about 3% over the current month.

It forecasts November demand for domestic crude at 7,015,000 b/d. It also expects that refinery runs next month will average 7,810,000 b/d, which would be a gain of 1.5% over last November.

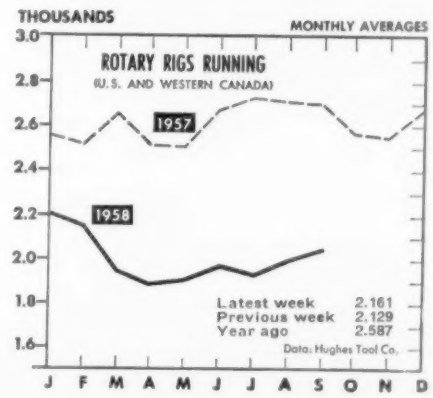
It would also mean that November crude runs would be about 180,000 b/d over the rate now indicated for October.

For the longer run, the Independent Petroleum Assn. of America looks for domestic demand in November, December, and January to run about 4.2% higher than the like period of last fall and winter.

John Winger, petroleum economist of the Chase Manhattan Bank, predicts that total demand for petroleum in the last quarter of 1958 could average 10-million b/d, and could "easily" increase to 10.5-million b/d. Those estimates are based on normal winter weather conditions.

Such estimates, if realized, would mean a 6.7% gain in demand in the fourth quarter over last year, and a 5.5% rise in the first quarter of 1959.

The Bureau of Mines' prediction for the fourth quarter of this year is for a 4% gain in total demand.



The Market Trend

At the Gulf: A Hand from an Old Friend

The Gulf Coast got help last week from an unexpected quarter: the export market. There hasn't been any export business to speak of since the Suez Crisis.

Last week's flurry of sales happened very quickly. Canadian buyers had tried the Caribbean area for stove oil, but found no coverage. European marketers needed some special gas oil, and had traditionally covered such requirements in the Gulf.

The first export sales last week were concluded by a Southwest independent. He sold two cargoes of "Canadian kerosine" to a major buyer. Canadian buyers just now are in a hurry, for it won't be too long before the St. Lawrence freezes over.

Next, another buyer picked up 12 cargoes of high-d.i., low-pour gas oil. Four refiners shared in this business. One independent got six cargoes; two independents each got one cargo; a major accounted for the balance.

All the sales apparently were made at close to going market prices. There were no premiums. More importantly, however, there were no big discounts. Had the foreign buyers wanted gasoline, they could have driven a hard bargain. The same would have been true for heavy fuel.

The important aspect of these deals, from a U.S. standpoint, is that much of the distillates in independent hands has suddenly disappeared. This could lay the foundation for a stronger Gulf Coast market on heating oils than would otherwise be possible.

Some East Coast buyers may have been caught napping, too. East Coast No. 2 prices have looked very ragged recently. It's possible that East Coast cargo buyers have been waiting for a price break in their home markets, hoping to knock down prices on future purchases in the Gulf.

Gulf Coast kerosine prices reacted to the export call—up 0.25¢ to 9.125¢. No. 2 fuel increases now seem a strong early possibility.

Gasoline T. W. Cuts:

Gasoline tank wagon prices shook out in many areas of the nation last week. In the Upper Midwest, Standard of Indiana reduced its dealer prices 0.5¢ to 1.5¢. Standard of Ohio cut 0.5¢ throughout most of Ohio.

In the East, reductions of 0.1¢ to 0.5¢ by Socony Mobil and Esso Standard pared prices in most states from Maine to Louisiana.

Gasoline vs. Residual:

Odds are that Persian Gulf suppliers won't cut gasoline prices to follow the example of Caribbean refiners last month. Actually, gasoline is tight in the Persian Gulf, because long supplies of bunker oil have caused cutbacks in refinery operations.

Heavy fuel supplies are building up too fast for comfort in the Middle East. Some refiners are recycling surplus residual back into the producing formation. One refiner sold three cargoes for delivery to New York.

Puerto Rico Fuel Bids:

Puerto Rico Water Resources Authority opened bids last week for the supply of 2-million bbl. a year to its Palo Seco steam plant. Bidding was keen. The apparent low appears to be for 600-vis. fuel oil, delivered to Puerto Rico, at 20¢ off Caribbean cargo prices for heavy fuel.

The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of October 20

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U.S. Gulf Coast, cargoes
- Gasoline, 98 oct prem. . . . 11.75-12.875
- Gasoline, 92 oct reg 10.5-11.5
- **Kerosine . . . . 9.125†**
- Heating oil, No. 2 . . . . 8.625-9
- Gas oil, 48-52 d.i. 8.875-9.5
- Fuel oil, bunker "C" $2.00-2.10

Caribbean, cargoes
- Avgas, Grade 100/130 16
- Gasoline, 93 oct research prem. . . . 10.75
- Gasoline, 87 oct research reg. . . . 9.875
- Gasoline, 79 oct research 9.125
- Gasoline, 70-72 oct motor method 9
- Kerosine 9.125
- Heating oil, No. 2 . . . . 8.625
- Gas oil, 48-52 d.i. 8.875
- Fuel oil, bunker "C" $2.00

New York Harbor, barges
- Kerosine 9.95-10.2
- Heating oil, No. 2 . . . . 9.45-9.7
- Fuel oil, No. 6 . . . . $2.37-2.45

Okla-Group 3, northern shpt., bulk
- **Gasoline, 89 oct reg . . . . 11.625↓-12.75**
- Kerosine 10-10.5
- Heating oil, No. 2 9
- **Fuel oil, No. 6 . . . . $1.40-1.50†**

Chicago, bulk
- **Gasoline, 91 oct reg . . . . 11.5↓**
- Heating oil, No. 2 . . . . 9.5-11.35
- Fuel oil, No. 6 high sulfur 6.9-7

Los Angeles, rack
- Gasoline, 88 oct reg 12.25-13.6
- Diesel fuel, PS 200 . . . . 10-11.25
- Light fuel, PS 300 . . . . $2.80
- Heavy fuel, PS 400 . . . . $2.15-2.35

Natural Gasoline, Grade 26-70
- FOB Group 3 . . . . 4.5
- FOB Breckenridge, Tex. 4

LP-Gas
- Propane, Oklahoma (Group 3) 5

Pennsylvania Lubes
- Bright stock, 25 p.t. 22
- 200 vis. neutral, 25 p.t. 21

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent, 95 v. i. . . . 23-24
- Neutral, solvent, 200-210 vis. . . . 19.5-20.5

Gulf Coast Lubes
- Bright stock, solvent, 95 v. i. 24
- Neutral, solvent, 200 vis. 20.5

Eastern Hemisphere

Singapore (Pulau Bukom), cargoes
- Avgas, grade 100/130 . . . . 17.25
- Gasoline, 79 oct research 10.375
- Kerosine 10.375
- Gas oil, 48 d. i. minimum 10.25

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, 36.0-36.9 . . . . 2.83-3.07
- **North Dakota, 36.0-36.9 . . . . 2.62↓-3.07**
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9 . . . . 3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9 . . . . 2.92-3.22
  - West Texas, sweet, 36.0-36.9 . . . . 3.00-3.07
  - West Texas, N. M., inter., 36.0-36.9 . . . . 3.00
  - West Texas, N. M., sour, 32.0-32.9 . . . . 2.86
  - East Texas, flat 3.25
  - Mirando, 28.0-28.9 . . . . 3.31
- Illinois Basin, flat 3.00
- Pennsylvania Grade, Bradford dist., flat 3.90
- California, Signal Hill, 21.0-21.9 . . . . 2.50
- North Louisiana-Arkansas, 36.0-36.9 . . . . 2.82-3.02
- Wyoming, sweet, 36.0-36.9 . . . . 2.90-3.00
- Wyoming, sour, 32.0-32.9 . . . . 2.71

Canada (flat prices, at the well)
- Acheson-Stony Plain (Alta.) 2.61
- Leduc-Woodbend (Alta.) 2.67
- Redwater (Alta.) 2.56
- Daly (Man.) 2.39
- Smiley (Sask.) 2.33

Venezuela (Cargoes, FOB lifting port designated)
- Cumarebo, 48.0-48.9, Tucupido 3.75
- San Joaquin, 41.0-41.9, Puerto la Cruz 3.34
- Oficina, 35.0-35.9, Puerto la Cruz 3.05
- Tia Juana, Medium, 26.0-26.9, Amuay 2.55
- Bachaquero, flat, Las Piedras 1.78-2.05
- Tarra, 38.0-38.9, San Lorenzo 3.08
- Lagunillas Heavy, flat, Cardon 2.10

†Differential per deg. of grav. varies.

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura 2.08
- Safaniya, 27.0-27.9, Ras Tanura 1.65
- Iran, 34.0-34.9, Bandar Mashur 2.04
- Iran, 34.0-34.9, Abadan 1.99
- Iraq, 35.0-35.9, Fao 1.98
- Kuwait, 31.0-31.9, Mina-al-Ahmadi 1.85
- Qatar, 41.0-41.9, Umm Said 2.23
- Neutral Zone, Burghan, 23.5-24.4, Mina Saud 1.61
- N. Zone, Eocene-Ratawi, 20.5-21.4, Mina Saud 1.43

Middle East, Eastern Mediterranean
- Arabian, 36.0-36.9, Sidon 2.49
- Iraqi, 36.0-36.9, Tripoli, Banias 2.49

Far East, Cargoes, FOB Lutong, Sarawak
- Seria Light, 37-38 . . . . 2.75

KEY TANKER RATES

(Last paid, per long ton, single voyage)

U.S. Gulf-New York, clean (USMC —7½%) $2.64↓
U.S. Gulf-New York, dirty . . . . (USMC —10%) $2.57
NWI-USNH, dirty . . . . (USMC —50%) $1.35
NWI-UK/Cont., dirty . . . . (Scale —50%) 30/10*†
Persian Gulf-UK/Cont., dirty . . . . (Scale —55%) 27/9*
Persian Gulf-USNH, dirty . . . . (USMC —52½%) $6.03

**Sterling.*

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Jackson 3-6951

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350 Park Square Bldg.
Hubbard 2-7160

Chicago 11 — Edward A. Callahan Jr.
520 North Michigan Avenue
Mohawk 4-5800

Cleveland 15 — J. E. MacArthur
1164 Illuminating Bldg.
55 Public Square
Superior 1-7000

Denver 2 — J. W. Patten
Mile High Center, 1740 Broadway
Alpine 5-2981

Houston 25 — D. O. Hanson
724 Prudential Bldg.
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Los Angeles 17 — Peter S. Carberry
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Huntley 2-5450

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Oxford 5-5959

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Gibson 7-5594

England, London E. C. 4 — E. E. Schirmer
McGraw-Hill Co., Ltd.
95 Farrington St.

DEPT/Service & Equipment Companies

WILLIAM H. COTTLE is head of sales of manufactured products for Tex-Tube, Inc., manufacturer and distributor of tubular goods, with offices in Houston. Cottle was most recently sales manager of Vinson Steel & Aluminum Co., Houston. Before that he was associated with G. A. Kelly Plow Co., in Longview, Tex.

G. F. Kline

W. H. Cottle

GEORGE F. KLINE became manager of the petroleum and petrochemicals department in the chemical plants division of Blaw-Knox Co., Pittsburgh, on Oct. 1. Kline, with Blaw-Knox since 1954, was formerly assistant manager of the department. Kline's new responsibilities include sales, proposals, contracts, processes, and design of complete refinery programs, as well as single-unit additions.

C. ROSS SPENCER has been named vice-president and manager of foreign marketing for Oil Center Tool Co., Houston, and **CHARLES T. JONES** succeeds Spencer as vice-president and sales manager. Jones was formerly OCT's assistant sales manager. **M. E. Hunter** has been named sales manager of the eastern region, and **A. C. West, Jr.**, sales manager of the western region. Hunter was formerly chief sales engineer, and West was OCT's West Texas-New Mexico district manager.

PHILLIP G. JACKSON has joined Rector Well Equipment Co. as sales engineer in the Rocky Mountain area, with headquarters in Casper. Jackson was previously associated with Republic Supply Co., Oklahoma City, and with Western Oil Tool Co.

JOHN R. SMITH has joined Tretolite Co., division of Petrolite Corp., as a corrosion engineer in the South Louisiana district, with headquarters in Lafayette. Smith was formerly a corrosion engineer for Dowell, Division of Dow Chemical Co., in Tulsa. **Ed L. Dressel**, formerly head of Tretolite's field service laboratory at Odessa, has been named corrosion engineer for the West Central division, at Dallas. He replaces **Mike C. Deodati, Jr.**, who transfers to the Southern division, in Houston. **Robert W. Taylor**, formerly a technician at the St. Louis (Mo.) laboratory, has been named junior testing engineer in Odessa.

EDWARD L. BRAUN has joined Genesys Corp., Los Angeles, as director of systems and electronics, and **CAPT. J. B. RAWLINGS, USN (retired)**, as controller of that company. Braun has been associated with Northrop Aircraft, Inc., Litton Industries, and Librascope, Inc., in California. At Genesys, Braun will direct his experience toward petroleum and petrochemical digital process control systems. Rawlings, most recently comptroller of American Pipe & Construction Co., South Gate, Calif., retired from the Navy in 1957.

FREDERICK W. TAHSE, JR., was appointed product specialist for the Scientific & Process Instruments Division of Beckman Instruments, Inc. Tahse, with headquarters at South Pasadena, Calif., will be responsible for all quotations and product administration on oxygen, thermal conductivity, and gas density instruments. Prior to his new position, Tahse was associated with Geodynamics, Inc., in Pasadena.

JOHN S. KLINE has been appointed assistant general manager and chief executive of Carpenter Steel Co.'s Alloy Tube division, in Union, N. J. Kline will be responsible to **P. L. Coddington**, general manager of the division, who retires next year. Kline was most recently divisional controller of the Tube division and the Webb Wire division, at New Brunswick, N. J.

FRED S. ALEXANDER has been appointed sales manager of the dehydrator division of Rolo Mfg. Co., Houston. He will be in charge of the Fish calcium chloride gas dehydrator, which Rolo was recently licensed to manufacture and sell by Fish Engineering Corp. Before joining Rolo, Alexander was assistant to the president of Continental Marine Exploration Co., Houston.

F. S. Alexander

F. C. Myers

FLOYD C. MYERS, vice-president and manager of oilfield sales and service for Black, Sivalls & Bryson, Inc., has moved to the new sales management headquarters of the oilfield equipment division, in Houston. In addition to serving as division sales manager, Myers is responsible for the district sales managers in Houston, Harvey, and Alice, Tex. BS&B also has regional sales managers located in Oklahoma City and Dallas, supervising other district sales operations.

J. McGraw, Jr.

C. L. Griffin

CLAUDE L. GRIFFIN has been named sales manager in charge of the United States and Canada for Security Engineering Division, one of the Dresser Industries, with headquarters in Dallas. Griffin was formerly vice-president of American Iron & Machine Works Co., in charge of international sales. **JOE McGRAW, JR.,** also from American Iron & Machine Works, has joined Security Engineering as a regional sales representative. He will be located at the company's recently opened office in Tulsa.

GEORGE H. CHRISTEN has been named sales manager in charge of the western districts of Crosby Valve & Gage Co. Christen, formerly manager of Crosby's Los Angeles office, will supervise the sales and service activities in the Southwest and Pacific districts. He will be located in Los Angeles and Dallas.

A. F. BEALE, JR., supervises the program of the new department for chemical research in the research and development organization of Dowell Division of Dow Chemical Co. Beale, formerly assistant director of Dowell's laboratory in Tulsa, will work through **R. B. Rosene,** director of that laboratory. **G. L. Foster,** formerly laboratory group head at Tulsa, succeeds Beale as assistant director.

DR. WILLIAM H. SCHUETTE, general manager of Dow Chemical Co.'s Midland (Mich.) division, has been elected vice-president of the company. Schuette, a Dow director since 1957, continues as general manager in Midland. He was named assistant to the Midland general manager in 1955, and in the following year became manager there.

C. L. NELSON has been appointed Four Corners warehousing and service representative for B & W Primary Cementing Tools. Nelson, with warehouse and yard facilities in Farmington, N. M., will stock B & W scratchers, centralizers, and holding devices.

JAMES H. WITHERS & CO., Long Beach, has been named manufacturer's representative on the West Coast for Frank Wheatley Pump & Valve Manufacturers, Tulsa. **James H. Withers,** head of the West Coast company, has been a sales engineer in Tulsa and Houston for Frank Wheatley. He was most recently associated with the valve division of Cameron Iron Works, Inc., on the West Coast.

ROBERT HUGHES has been appointed director of research and development, and **DR. JOHN A. ANTHES** assistant director of research and development, for Dravo Corp., Pittsburgh. Hughes replaces **W. L. Newhall,** who retires after 33 years with Dravo. Hughes, with Dravo since 1945, was most recently engineering manager of the engineering works division. Anthes joined Dravo in 1953, and has been process engineer in the engineering and construction department of the machinery division.

JACK L. RIPPER, formerly assistant director of public relations of Mid-Continent Supply Co., has established his own company, in Fort Worth, to handle industrial editing, publicity, public relations, and sales promotion.

DR. MARCEL GASCHKE was appointed research chemist at M. W. Kellogg Co.'s Jersey City research and development laboratory. Before coming to Kellogg, Gaschke was engaged in fundamental research at Rayonier, Inc., New York.

JOHN E. RYAN is resident manager of Industrial Supply Co.'s new sales office in Amarillo. **Will W. Brooks** succeeds Ryan as Industrial's resident manager in the Fort Worth sales office.

LEWIS H. JOHNSON, JR., is head of a new regional sales office at Baton Rouge recently opened by B-I-F Industries, Inc., manufacturer of process instrumentation and equipment. The new office will handle the products of B-I-F and its three divisions—Builders-Providence, Inc., Proportioneers, Inc., and Omega Machine Co.

DONALD L. BENSCOTER was appointed Dallas district manager of Burroughs Corp.'s ElectroData division, succeeding **Joseph A. Resca,** recently appointed New York district manager. Benscoter, with Burroughs since 1948, joined the ElectroData division in 1957 as a sales representative. In his new position, Benscoter will be in charge of sales and service of the company's electronic computers and processing systems in the South Central states, from Mississippi to New Mexico.

GAVIN S. YOUNKIN has become head of sales activities for Minneapolis-Honeywell Regulator Co.'s Datamatic division in Boston, in a move to transfer direct responsibility of Datamatic sales to a corporate office. Younkin is vice-president and general sales manager of Minneapolis-Honeywell.

MERLE R. LIKINS is in charge of a new Houston field technical sales and service office for Girdler catalysts, manufactured by the chemical products division of Chemetron Corp. Likins was formerly a member of the Girdler catalysts technical service staff in Louisville, Ky. The new office will service users of Girdler specialty catalysts in Texas, Oklahoma, Louisiana, Arkansas, and Mississippi.

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The advertising rate is $16.75 per inch for Equipment and Business Opportunity advertising appearing on other than a contract basis. Contract rates quoted on request. Employment opportunities—$22.20 per inch, subject to Agency Commission.

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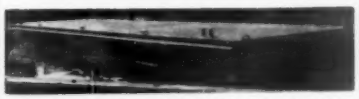

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New, all welded. Capacity 1200 tons—6500 bbls.

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Some Facts that Needed Saying

THERE HAS BEEN A GROWING TENDENCY in recent years to discredit the profit motive. It has almost reached the point where one feels the need to apologize for making a dollar.

This has pushed the oil industry and others into awkward and even foolish public positions. It has caused industries and individual companies to attempt to cloak everything they do in a mantle of public service alone. Some seem to feel the need to try to don a Santa Claus suit and appear to exist only to spread good cheer and fellowship.

This situation created a growing need for someone to put an end to pussyfooting about why a company is in business. To clear the air, there needed to be a statement by a company official in which he would frankly say that his company is in business to make a profit, that the firm was founded for that purpose, and that stockholders had invested their money in his firm for that reason.

LAST WEEK AN OIL COMPANY OFFICIAL rose to the occasion. Robert G. Dunlop, president of Sun Oil Co., got to the heart of a problem in a speech before the Virginia Oil Men's Assn. Here, in part, is what he said:

"It is high time that we take the offensive on the subject of profits—to get before the public the true story of what profits we make and where they go. For if people do not understand the function of profits, they will not understand anything else we do.

"If we can demonstrate that business actually is 'out to make a profit'—to borrow an expression from our critics—and why it must do so if it hopes to survive, I believe we will accomplish a great deal in winning better understanding in another area of criticism, which concerns prices and why they behave as they do.

"Until we adopt a positive attitude about profits, we will be unable to show how every seller must be as competitive about earning money as he is in making sales. For, if another business can out-profit ours, we will find ourselves out-serviced, out-equipped, out-researched, and out of business.

"The drumfire of attacks and criticism to which the petroleum industry is subjected shows that we have failed to build a foundation of understanding as a bulwark against such attacks."

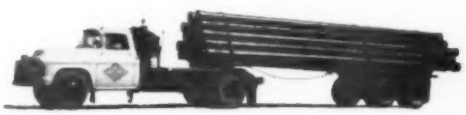
DUNLOP'S STATEMENT is not a "public-be-damned" approach. Rather, it is the opposite, in that it helps remind the public that the profit motive has been one of the key incentives in making our nation great. We are confident—and Sun's president apparently is, too—that the public prefers this nation's long-standing profit system to socialism or communism.

It is hoped that other firms will take advantage of any opportunity to speak up in similar fashion.

Congrats and $25 to Doug Foster, Atlantic Refining Co., Dallas, Texas

Drilling for and producing oil and gas is a rugged business demanding great risk and courage. More, it requires plenty of rugged, dependable pipe. That's why Lone Star Steel was established in the heart of oil country.

The huge Lone Star plant, a modern miracle of automation and quality control, makes the kind of tough casing, tubing and line pipe American Petroleum Institute specifications call for. And, as Joe Roughneck knows, Lone Star offers a real convenience in fast, economical delivery.



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Dowell Guide to Acidizing

1. Paradox Lime
San Juan County, Utah

1. This formation is both vugular and highly soluble. Good results often occur after a wash of Mud Acid, followed by Retarded Acid or regular acid with surface tension and emulsion control agents added. Acid volumes range from 1500 to 10,000 gallons or more. *Wells often potential more than 1000 bopd.*

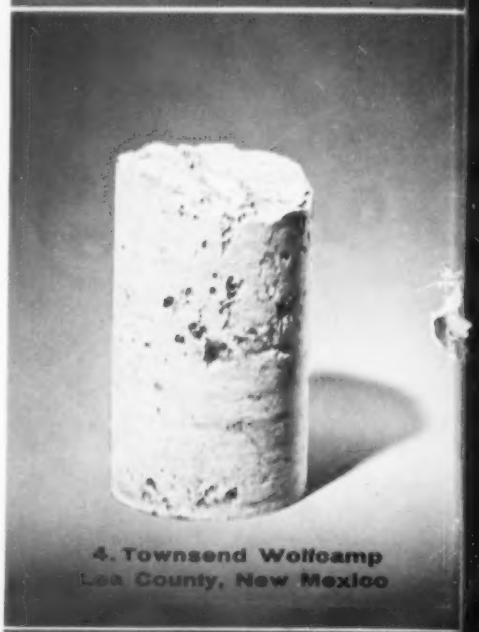
2. This vugular pay reacts quickly with regular acid. For this reason an acid with retarded action has been used. Typical treatment is 250 to 500 gallons regular acid containing surface tension, anti-emulsion and silicate control agents; followed by 1000 to 5000 gallons of the slow reacting fluid used in Acid Petrofrac®. *Wells producing from 16 to 45 bopd often increase to 80 to 125 bopd.*

2. Noodle Creek Lime
Jones County, Texas

3. Chester Lime
Beaver County, Oklahoma

3. Reaction time is usually less than one minute in regular acid. As a result, Retarded Acid is usually recommended. The following three-stage treatment has proved successful: (1) 500 gallons Mud Acid; (2) 500 gallons regular acid with surface tension and anti-emulsion agents added; (3) 5000 to 20,000 gallons Retarded Acid injected at rates up to 30 bpm. *Some previously non-commercial wells have potentialed 20 million cfd after treatment.*

4. This dolomitic limestone is found from 10,400 to 11,100 feet. Some sections have crystalline porosity. Some are fossiliferous, and some are vugular. Treatment with either 10,000 gallons Retarded Acid or 3000 to 20,000 gallons regular acid has been successful. A wash with Mud Acid ahead of the main treatment is recommended. *Wells have potentialed 300 to 500 bopd after treatment.*



4. Townsend Wolfcamp
Lea County, New Mexico

5. Many new wells in the Midale Beds get good drill stem tests, but produce only a show. Treatment is often a 500 gallon wash of Mud Acid followed by 500 to 2000 gallons Dowell regular acid with anti-emulsion, surface tension, and silicate control agents added. Injection pressures are held to 1000 psi or below to minimize water troubles. *After treatment, wells have potentialed 80 to 100 bopd*

6. This flashy formation reacts fast with regular acid, so Dowell has used Retarded Acid to increase penetration, drainage area and production. Typical treatment is 500 gallons Dowell acid with surface tension and de-emulsifying agents added, followed by 3000 to 4000 gallons Retarded Acid. *Potentials are often increased from a show to 240 bopd.*

5. Mississippian Lime
Southeastern Saskatchewan

With 41 different acid addition agents to choose from, Dowell engineers can help you "tailor" the best acid treatments to the requirements of your well. Call your nearest Dowell engineer. Let him tell you how Dowell acidizing services have helped other operators in your area get higher production from their wells. Have Dowell acidize your wells. Dowell, Tulsa 1, Oklahoma.

Services for the oil industry

DOWELL

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6. Lansing-Kansas City Lime
Barton County, Kansas